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Remember . . . Ansochrome gives you positive film transparencies that let you see the color clearly, brilliantly—just as your camera caught it. You can process Ansochrome and make natural color Printon prints in your own darkroom. Or your dealer can give you prompt and inexpensive service through the Ansoc color finisher near you.

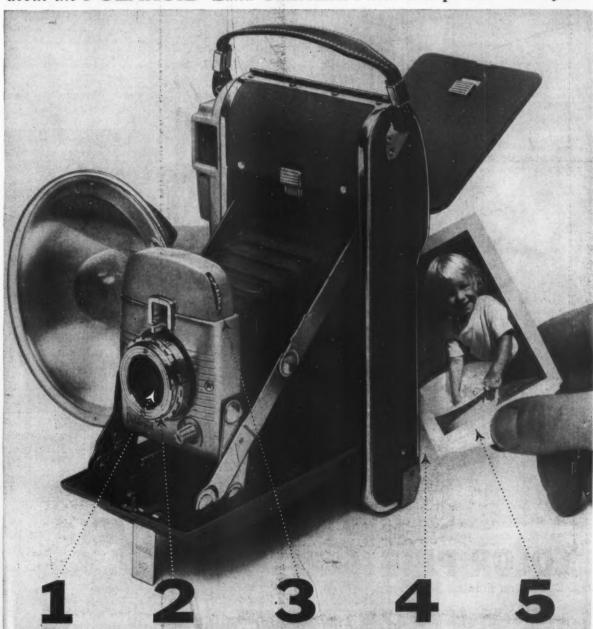


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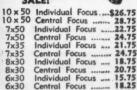
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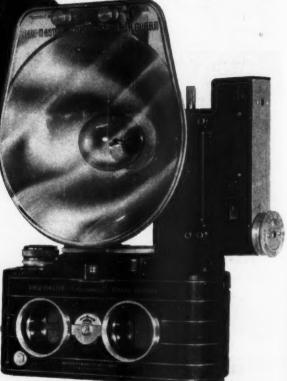
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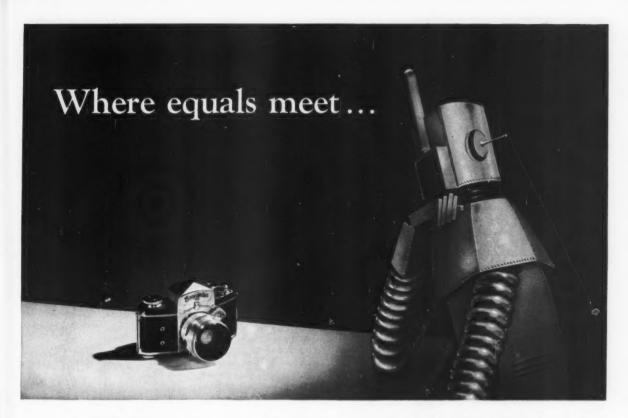
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COMPARE CONNER BREAK

THIS MONTH'S COVER . .

The pretty Charleston dancer on our cover who looks so much like Audrey Meadows of the Jackie Gleason show is model Jessica Ford. She and photographer Mort Weldon did such a fine series of photographs, full of life and vitality, that we had a terrible time choosing one. So, we're printing a second one (crazy, no?) to share the wealth.



Dig that dancing lady!

Technical data: 4x5 Super D Graflex. Daylight Ektachrome, two 1,000-wattsecond electronic flash units.

HAPPY COINCIDENCE . . .

We were very pleased when we got our I Tried It Myself (see page 42) together this month. Seemed like a fine set of pictures and one of our readers had hit the jackpot again, David S. Strickler of Boston... No sooner had we finished our choice. when in came a news release. Mr. Strickler, a Boston University senior, with a major in photo-journalism had just been named "Photographer of the Year" in the National Collegiate Photo



Frank Lloyd Wright . . hates flash on camera, above

with the editors

Contest sponsored by Kappa Alpha Mu, the National Press Photographers Ass'n, and the Ass'n of Student Unions. He took first prizes in the portfolio, feature, portraits and best print divisions. His "Sisters Simonizing," which appears in I Tried It Myself this month, took the top award in the feature class. His prizes: a complete set of the Encyclopedia Britannica and a two-week stint with Life magazine in New York.

A BOUNCE THAT BOUNCED . . .

Frank Lloyd Wright, one of the great forceful personalities of our time, is a man of opinion. Recently he gave some opinions on the use of flash to intrepid reader Hughes Rudd of Overland Park, Kansas. Here is Mr. Rudd's résumé of his engagement, photographic and verbally, with Mr. Wright:

"A few months ago I went backstage at the Stanford University Memorial auditorium to photograph Frank Lloyd Wright prior to his lecture before the Stanford student body. The famous architect agreed readily to my making the pictures, but when shooting actually began, he delivered a small lecture on lighting techniques.

"'I don't know when you damn people will learn that's the wrong way to light me,' Mr. Wright said as I raised the flashgun for the first shot. Well. Mr. Wright has a forceful personality: I lowered the flashgun and asked him what he meant.

" 'Direct light like that,' he growled, 'it's harsh, unflattering. At my age you don't want to look a damn bit older than you are. Don't use any flashbulb at all.'

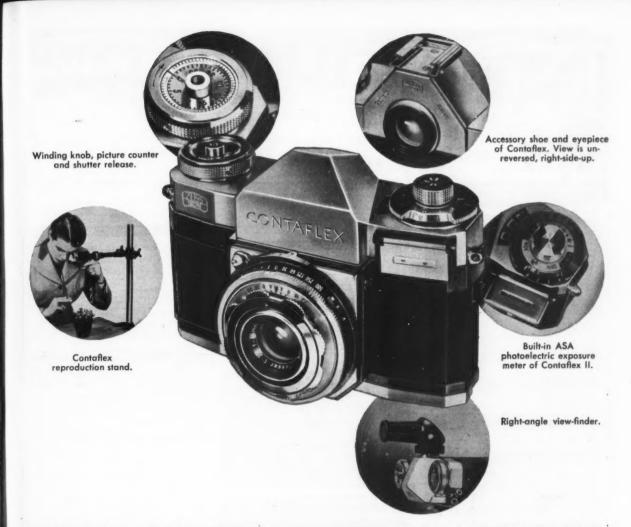
"I explained that in the dim light of the auditorium's green room the f/3.5 Tessar on my Rolleiflex was too slow to shoot without auxiliary light, but suggested a compromise: bounce flash off the high ceiling. Mr. Wright agreed

(Continued on page 18)



but the photographer hates the bounce effect, above

Att



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35mm f3.5 Nikkorg W.A 97.50	57.00	40.00
35mm f3.2 Serenare W.A 94.00		45.00
35mm f3.5 Summarong W.A 96.00		40.00
50mm f3.5 Elmare 57.00	34.00	25.00
50mm f1.4 Nikkorg 199.50	118.00	80,00
50mm f1.5 Sonnarg 175.00	98.00	70,00
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50mm f1.5 Summarite	109.95	80.00
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85mm f1.5 Serenarg	137.50	110,00
85mm f2 Sonnarg Tele 229.00	99.50	75.00
85mm f1.5 Summarexg 360.00	179.00	140,00
90mm f4 Elmarg 90.00	58.00	40,00
100mm f4 Serenarg 87.00	49.00	35.00
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105mm f2.5 Nikkorg 152.50		75.00
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35mm f2,5 Angenieuxg	99.50	56,95	45,00
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40mm f3.5 Makro Kilar Model Dc			
50mm f2.8 Westanar Auto Diag	69.50	44,50	30.00
50mm f1.9 Xenon Autog	169.50	119,00	85,00
58mm f2 Biotarg		49.00	30,00
50mm f2 Biotar presets	125.00	63.95	45.00
75mm f1.5 Biotarg	216.50	93,95	70,00
85mm fl.5 Lithogong	179.50		85,00
90mm f2.5 Angenieuxg	94.50	58,50	40.00
90mm fl.8 Angenieuxg	149.50	95.95	75.00
90mm f1 Sung	51.95	24.50	18.00
90mm f4 Sun presetg	64,95	33,50	25.00
135mm f3.5 Angenieuxg		54,50	30,00
135mm f4.5 Steinheilg	60,00	37.00	22.00
135mm f3.8 Sung		29.50	20.00
135mm f3.5 Sun presetg	74.95	36.50	25.00
135mm f3.5 Tele Colnar presetg	84.95	44.00	30.00
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Contax II f2 Sonnar	83.95	65.00
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Contax IIA f2 Sonnarg* 345.00	167.00	
Contax IIA f1.5 Sonnarg* 374.00	189.50	
Contax IIIA f2 Sonnarg* 383.00	194.50	
Contax IIIA f1.5 Sonnarg* 412.00	196.00	196.00
	84.50	65.00
Leica IIIA f2 Summar	92.50	70.00
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	Develop	er for	Rolls		\$1.95	
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Nikon fl.4 Nikkorg*	299.95	167.50 125.00

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Contaffex f2.8	Tessar Auto	R.F	169.00	\$ 86,50	70,00
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Exakta VX f2			392.00	224.00	180.00
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Exakta VX f2			279.50	169.00	
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			199.00	129.00	95.00
Contax D f2 B	lotar P S et		199.00	119.00	
Pentacon f2 E			249.50	129.00	100.00
Praktica FX f2			99.50	42.50	
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Contessa f2.8 RF meter MXg*	85,95	60.00
Kodak 35 f3.5 RF	29,95	20.00
Kodak Retina IIC f2.8 RFg 135.00	105.00	65.00
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Voigt Prominent f1.5 RF MXg 270.00	136,95	105.00
Voigt Vitessa f2 RF MXg 127.50	84.00	55.00
Voigt Vito II f3.5g* 54.50	29.50	22,00
Voigt Vito III f2 RF MX* 119.50	79.50	55,00
Voigt Vitessa L f2 R.F. MX 159.50	107.50	75.00
Voigt Vito B f3.5g 54.50	34,00	25,00

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Auto Rollei IIB f3.5 Tessarg*		107.50	85.00	
Auto Rollei IIB f2.8 Tessarg*		149.50	105.00	
	217.50	116.95	100.00	
	232,50	126.95	110,00	
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135mm f4.5 Telephoto	289.50		150,00	

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Keystone K-30 Capri f2.8g	54.95	34,50	25.0
Keystone K-32 Olympic f2.5g	79.95	46.00	30.0
Keystone Bel Air f2.5 Magg	89.50	52.00	35.0
Revere 50 f2.8g	49.50	24.00	18.0
Revere 88 f2.5g	74.00	33.50	25.0
Revere 80 f2.5c	97.50	44,00	35.0
Revere 84 f1.9 Turg	147.50	84.00	70.0
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Bolex H16 Leader (3 lenses compl)g.	399,45	229,95	180,00
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Octamtre	486,00	295,00	225,00
Bolex Pan Cinor f2.8 Caseg	349.50	199,00	165.00
Cine Kodak K100 f1.9	269.00		130,00
Cine Kodak Mag. fl.9		57.00	45,00
Cine Kodak Royal Mag. fl.9g	169.50	104.50	80.00
Cine Kodak Special II f1.9g Tur	990.00	599.00	400,00
Keystone A15 Newport fl.9 Turret	199.50		100,00
Elgeet Stereo Outfit Complete Spec	89.50	69.50	50.00
Eigeet Stereo Outht Complete Spec		57.50	40.00
Keystone A-9 f2.5g		97.00	70.00
Keystone A12 f1.9 Turg	159.50		60.00
Keystone K50 f2.5 Magg	129,50	82,50	
Keystone K55 fl.9 Mag Turg	175.00	117,00	80.00
Pathe Super 16 Turg	450,00	229.00	180.00
Revere 16 f1.9 Magc	182,50	87.00	60.00
Revere 26 fl.9 Mag Turg	212,00	105.00	70.00
Revere C101 f2.5	139,50		70.00
Revere C103 f1.9 Turret	194,50		95.00
Revere 36 f2.5 Mag	139.50		70.00
Victor IV fl.9 Tur		99.00	65,00
Vistascope Outfit Case	125,00		65.00
Zoomar 16 f2.8	600,00	395,00	300.00
Addition to tale	000,00	370.00	

New Head Trade-in

ROLL FILM CAMERAS

-in .00 .00

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GRAPHY

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istascope oomar 8	Out	fit, Ca	ise					75.00 199.00		40.0 110.0
evere 861 evere 861	f1.	9 Mag	Tues				 	137.50	81,50	58.0

CRADUILIA CALAR ROLLIES

16MM PROJECT	ORS	
Ampro Imperial 1000 W Case	Used \$197.00 235.00 117.50 185.00 75.50	150. 90. 135.
Keystone K161 750 W Splicer Case. 159.50 Kodascope Royal 1000 W 240.00 Revere 48 750 W	85,00 164,00 95,00	115.



SPAI	KKLING	COLOR	P	(IN	12
2x31/4	-Usually	35c Our	Price	25c	62
21/2x31/	4-Usually	54c Our	Price	25c	ea.
31/414	-Usually	75c -Our	Price	47c	ea.
4x5	-Usually				
5x7	-Usually	1.50-Our	Price	89c	68
8x10		3.00-Our			

	16MN	SOU	סא	PROJ	ECTO	RS
3				New		Trade-In
	De Luxe Styl Premier 40 1				\$265,00	\$185.00
B&H 26	35C 750 W Ca	se		449.95	249.50	200.00
	15 B1 1000 W				319,00	230.00 375.00
Movie I	Wite 63LM 30	0 W Case		275,50	163.00	115.00
Revere	SP16 750 W	Case		325,00	163.00	135,00

ENLARGERS

Super Ikonta III f3.5 Tessar R.F.	***	-	
MX Voigt Bessa II f3.5 RF MXg	124.50	77.50 68.95	
4 0			
PRESS CAM	MERA	S	- 3
			Trade-in
23 Ann. Graphic RF f4,5 lens		\$ 83.95	\$ 55,00
45 Ann. Graphic RF f4.7 lens 2x3 Linhof Super Tech RF 3-lenses		96,00	75,00
comp 21/4x31/4 Bertram f3.5 Xenar Multi-	569,90	338.00	280,00
	495.00	339.50	240.00
4x5 Linhof Super Tech RF f4.5 MX	389.75	207.00	165.00
21/4x31/4 Pacemaker Speed f4.5 KRFg*	313.95	147.59	120.00
31/4x41/4 Pacemaker Crown f4.7 KRFg*	267.45	139.00	100,00
4x5 Pacemaker Speed f4.7 KRFc* 4x5 1955 Pace Crown f4.7 Multi-	315,45	172.50	130.00
focus R.F	207 50		150,00
4x5 B&J Press f4.7 Kalart R.F	197.50	89.50	60.00
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b			OR I	S PT A A S	PFA	PFAI	382
	35mm	Ansce m	ounted.	\$1.	00-3	for \$2	2.70
	35mm	Ektachro	me.	\$1.	25-3	for \$3	3.25
	120/8	20 Ekta	chrome	or Ans	000	1 per	rell
		Slide	DI	pli	cate	25	

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23 up to 21/4x31/4	DDiffusion
	CLColdlite
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23C or De Jur II f4.5g	\$ 99.50 \$ 59.50 \$ 30.00
35C Federal 135 f4.5 storway	. 49.95 29.50 20.00
23D Federal 240 f7.9 Storway	24.95 14.50 10.00
23D Federal 269 f6.3 storway	39.75 21.95 12.00
23C Federal 279 f6.3 storway	
23C Federal 311 f4.5 storway	
23CL Federal 315CL f4.5	80.00 49.50 30.00
45C-AU Besseler 45M AutoFocus	197.75 90.00
S7C-AU Besseler S7MB AutoFocus	
45C AU Omega D3 AutoFocus	207.50 105.00
45C Federal 470 f4.5	
45CL Federal 450CL f4.5	
23D Fotolarger Merit f6.9	23.95 14.50 10.00
23D Fotolarger D45 f4.5	
57D Solar 57D	86.58 49.00 35.00

	SLIE	DE PR	OJECT	ORS
*Blower cooled	300W#	Case	New \$ 66.50	Used 43 50

21			
*Blower cooled	New	Used 1	Trade-in
Argus Automatic 300W* Case\$	66.50	\$ 43,50	\$ 30,00
Argus PB 300, case*	48,50	26.00	
GoldE Manumatic 300 W.*	58,50	26.00	20,00
GoldE Coronet 300 W, case*	44.75	22,00	15.00
Kodaslide Merit 150 W	26,10	16,50	10,00
Kodaslide Signet 300W*	59.50	****	30.00
Kodaslide Signet 500W*	72.50	49.00	35,00
Kodaslide Table Viewer 4x		27.00	20,00
LaBelle 22 Automatic 200 W*	69,00	46.50	35.00
LaBelle 55 Automatic 500 W*	95.00	54,00	40,00
La Belle Director 300W Auto*	59,50		30,00
Nord Stereo 300 W*	99.50	69.00	50,00
Revere 555 500W Auto Case	79.50		40.00
Revere 888 500 W Auto Remote Case.	119.50		60,00
Revere 444 300 W*	69,50	31,00	22,00
SVE Instructor 300 W slide & strip*	89.50	57.50	
TDC Headliner 300W Semimatic*	49.99	28,50	20.00
TDC Mainliner 300W Semimatic*	59,50	30,95	25,00
TDC Model D 300W Semimatic*	67,50	35,50	28,00
TDC Duo 300W 21/4*	67.50	35.00	28,00
TDC Duo 500W 21/4*	84,50	52.50	
TDC Project-or-View 200W*	77.50	46,00	35.00
TOC Stereo Projector 500W*	169.50	98,50	75.00
TOC Stereo Projector View 300W*	144.58	96,50	
Viewlex V33L 300W Auto*	67.00	39.95	30,00
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B&H Regent 500 W Case	179.	75 184.00	80,08
Bolex M-500 W Case	169.5	0 114.00	85.00
De Jur 750 W Case	159.	50 84.00	65,00
De Jur 1000 W Cordomatic Ca	se 177.	105,00	85,00
Keystone K70C Brightbeam 500	W Case	. 79.95	57,00
Keystone K109 750 W Splicer			
Keystone K100 500W Case	99.5		
Keystone K95M 750W Case	127.9		
Keystone K109M 750W Case	167.5	0 94.00	75.00
Kodak Brownie 300 W Case	62.0		
Kodascope 8-71A 1000 W	110.		50,00
Revere 777 750 W Case	127.		60,00
Revere 85 500 W			45.00
Revere 90 750 W	125.0	67.00	50,00
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16MM	CAME	RAS	
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497	EXPOSURE	METERS	
Argus		New Used Trad	le-in 8.00
Brockway (M3)		16.95 11.95	8.00
De Jur Dual Professi	ional		00,00
De Jur 58 Spec			4.00
GE WD 66			8,00
USC-No. 86			8,00
GE PR1			6.00
GE Mascot PR30 Gossen Underwater			0.00
Leica Meter			6.00
Minox Case & Chain.	***********		5.58
Norwood Director			0.00
Polaroid		15.75 9.50	6.00
Sixti	***********		0.00
Sixtomat X3			2,00
Weston Cadet			8.90
Weston DR w/case			8,00
Weston Master 11 U	MIV	29.95 14.95 1	0,00
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	ELECTRONI	C FLASH	77

Cine Kodak Magazine fl.9g 149,50 82,00 60,00	
Kodak Brownie f2,7g 37,50 21,95 15,00	
Bolex 8mm Pancinor f2.0g 219.50 144.00 110.00	
Bolex H8 Leader fl.9 Turg 259.50 144.95 115.00	- 1
Bolex B8 f2.8 Yvar Turg 119.50 69.00 55.00	- 1
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8&H 252 f2.3 Montereys 59.95 39.00 28.00	
B&H 172 B f1.9 Mag.g 164.95 101.00 80.00	- 0
B&H 134V f2.5c\$ 89.95 \$ 40.00 \$ 30.00	
New Used Trade-In	

Auricon Cine Voice fl.9g	New 749.00 1990.00	Used 1 \$538,00 1300,00	
16MM CA	MER	AS ·	
Revere 85 500 W	114,50	59.25 67.00	45.00
Kodascope 8-71A 1000 W Revere 777 750 W Case	110,00	72,50	50.00
Keystone K109M 750W Case Kodak Brownie 300 W Case	62.00	94.00 39.50	75.00
Reystone R95M 750W Case	127.95	84.00	65.0

	New	Used T	
Ce Be 1 Portable	69.95	\$ 29.50	\$ 20,00
Dormitzer DB 1 Portable	109.50	49.50	30,00
	140,00	79.00	50,00
	197.50	97.50	50.00
	349.50	209,00	130,00
	119.50	69,00	45.00
Mighty Lite AC	49.50	35,00	20,00
Mighty Lite Port	69.50	49.00	30,00
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The world's most magnificent Coupled Rangefinder Stereo Camefa with Fully Automatic Features and f.3.5 Steinheid Cassar color-corrected lenses in two coupled Pronto shutters with speed settings of bulb, 1.25, 1.50, 1.100 and 1.200th of a second, also, self-timer, built-in flash, rapid-winding lever, double exposure preventions, self-coking lever, cable.



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COFFEE BREAK

(Continued from page 12)

that I make the shot left, page 12, at 1/1000 sec., f/8, Eastman Super XX film

"By this time I had regained a little self-confidence in the face of the great man's growls, and made another shot by direct flash, 'to make sure,' 'It won't be any good,' Mr. Wright said flatly, and stalked on stage, but I like it better: it seems to me to reveal more of the character and determination which made Mr. Wright one of the controversial geniuses of our time. In contrast, the bounce light shot seems too soft, effeminate and 'arty.' Exposure for the second shot was 1/100 sec., f/22. Film was developed in Microdol, prints on Kodabromide F2."

Having heard several people ver-bally knifed to death by Mr. Wright on radio, we're not going to state our preference. What's yours?

EVERYBODY'S DOING IT . . .

The American public is probably spending more time underwater these days than ever before. They're looking at undersea growth, beautiful mermaids and taking pictures of everything with all kinds of cameras. In the course of our research into what's going on underwater, we discovered



Monster and camera . . .

that our old friend, the Loch Ness monster, has been bitten by Mons. Daguerre's disease. Complete story about the monster's new hobby and how you can join him in his revels begins on page 52, details on the monster himself, page 59.

FROM THE SUBLIME TO PINUPS . . .

Alfred W. Jan, a dignified gentleman whose business is the restoration of old masters, has been an amateur for more than 20 years. He bought one of the first Leicas on the market, now has a Leica M-3. In his business, he uses the camera to keep a constant visual record, as he cleans, takes off layers of paint to restore old paintings to their original state. (Collectors used to clothe an undraped figure in a new dress or add a vase or a dagger to "improve" on what the original painter had done-now we want to see what the artist himself created, hence Mr. Jan's exacting profession.)

As a hobbyist, Jan took beach pictures, whatever struck his fancy. Early this year at the National Pho-(Continued on next page)



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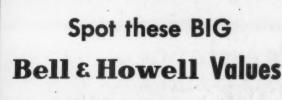
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Bell & Howell 220 Wilshire \$4.95 Bmm CAMERA Only 4.95 makes movies as easy as snapshots

when you dial the sun you're set to shoot!

Just dial the sun—bright sun, hazy sun, light shade, cloudy dull—and forget the technicalities! This sensational Bell & Howell Wilshire's so simple anyone can use it. No bother with distance setting either. Always sharp movies—near or far. The only camera with a standard 10mm f/2.5 wide angle lens. See the Wilshire today. Monterey model, with f/2.3 lens, \$59.95.









SAVE \$20 on this complete 8mm movie outfit

Wow! This is news! A big \$20 summer saving on a complete matched set for taking and showing sharp black-and-white or color movies. Includes Monterey 8mm movie camera, leather camera case, Monterey projector, light bar, photofloods, 50-ft. roll of color film, shadow box preview screen and cartoon film. At a take-it-easy-special price. Only \$160.95.

EVERYTHING FOR MOVIE MAKING —Indoors or Outdoors

A complete outfit—Wilshire 8mm camera, leather camera case, light bar, two photofloods, 2½ X telephoto, filter holder. Wonderful buy Only \$89.85.







Companion Model 134-W

The kind of 8mm movie camera that you'll love to use—it's so lightweight and easy to carry —so easy to operate. Drop-in spool loading, Drop-in spool loading, built-in exposure guide, four filming speeds. With 0.5-inch f/2.5 lens, a Bell & Howell standout value . . . \$79.95.

Auto Load Model 200-A

-arrestingly handsome 16mm magazine camera is every bit as fine as it looks. Threenne as it looks. Three-second loading, five speeds, long 12½-ft. film run, built-in exposure guide. With 1-inch f/2.5 lens. \$174.95.

TWINAUTOLOAD MODEL 200-T— Similar to 200-A plus two-lens Swifturn turret . . . \$219.95.



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New! and what a buy! TDC Headliner 303

2 x 2 COLOR SLIDE PROJECTOR

Now another brilliant performer joins America's leading



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The new take-it-easy-low-price is only half the good news. For the Monterey is a standout performer. Simply designed, compact and easy to use, the Bell & Howell Monterey puts on a brilliant, 30-minute show. Swing-out lens mount for easier threading, 500-watt lamp, 400-foot film capacity, fast power rewind, 1-inch f/1.6 lens, die cast aluminum case. All this now for only . . . \$79.95—was \$99.95.





No other 8mm projector—regardless of lamp wattage—gives greater screen illumination than this Bell & Howell beauty. It's terrific! Enjoy the Regent's full ½-hour show—and all these these quality features: error-proof threading, all-gear drive, still picture projection, power rewind. Most compact, lightest weight quality 8mm projector. Complete with case only . . . \$179.95.



With WIND TUNNEL COOLING

TDC De LUXE Model D

A top-flight 300-watt TDC projector that brings the best out of 2 x 2 color slides—and makes showing extra easy. Mounted in Airflow Case for easier set up. Will not "pop" cardboard slides under normal operating conditions. Precision roller-bearing focusing, whisper-quiet Venturi blower, SELECTRON. SELECTRON-

Semimatic changer. With coated 5-inch f/3.5 anastigmat lens.

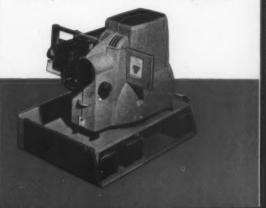




WIND-TUNNEL COOLING SAFEGUARDS SLIDES

Steady stream of cool air sweeps upward. AIRFLOW CASE HOLDS ... Projector—Changer—Selectrays

STREAMLINER 500





TDC Stereo Colorist No stereo buy



Built-in "deep focus" makes it easy to get sharp, clear pictures. Synchronized for all flash. Automatic doubleexposure prevention. Gauthier shutters (1/10-1/200 and bulb). With matched 35mm f/3.5 Rodenstock Stereo-Trinar coated lenses. A sensational buy!

TDC Stereo Vivid Most automatic of all stereo cameras



Just select shutter speed, set exclusive Exposure dial, sight, focus, and shoot. How's that for ease? Shut-How's that for ease? Shutter and aperture settings work together automatically. Rangefinder focusing. Synchronized for all flash. Withmatched Tridar 35mm f/3.5 coated anastigmat lenses, only \$149.50

Lifelike Stereo TDC PRODUCTS by



easier with Bell & Howell



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TDC STEREO PROJECT-OR-VIEW

Makes 3-D projection or viewing e-a-s-y! Projects brilliant image on large screen. Or throws stereo on big 72-sq. in. black viewing glass. Twin 3-in. f/2.8 coated anastigmat lenses, polarizers, condensers, reflectors, 300-watt blower cooled lamps. A doubleduty value, only \$144.50. Limited time offer. Save \$20 on this unit when you buy a TDC Stereo camera.



TDC STEREO VIVID PROJECTOR

Lets you sit back and enjoy the fines 3-D show you ever saw—brilliant be yond compare. Twin 500-watt (or 70 watt optional) light system. With coated f/3.5, 5-inch matched lenss \$169.50. Limited time offer. Saw \$20 on this unit when you buy 1 TDC Stereo camera.



TDC STEREO VIVID DE LUXE VIEWER

Bigger, brighter image. Larger aper ture provides easier viewing for stem slides. Dual focusing knobs; inter-ocular control; matched achromatic lenses \$17.50

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The Master's leadership remains unchallenged, because it's the truly universal meter for advanced workers. Light measurements made by the preferred, and accurate, reflected brightness method; although incident light readings are also available with the Invercone. Has double light scales...over 45% greater length ... to assure easy, accurate readings. All shutter speeds and lens markings are on the exposure dial which also is clearly marked to give you complete control of negative density as well as color values. See the MASTER at your local camera store.

WESTON exposure meters

he Meters Most Photographers U

COFFEE BREAK

(Continued from last page)

tography Show in New York, he stopped at the Mayfair booth, where a young lady was posing for snapshots, illuminated by Mayfair lights.



Time off from old masters . . .

Jan snapped his Leica, later discovered he'd picked up an entry blank for the contest, sent off the picture and forgot it. It was his first contest, first submission of any kind in his long hobby life. End of story? He won first prize, a handsome watch, over 20,000 other entries. Moral: don't hide your camera under a bushel, enter the contests.

COMING NEXT MONTH . . .

• Special 35mm Issue! Whether you're a confirmed 35mm user or are just now considering the purchase of a 35mm camera, the Sept. issue of MODERN is a must for you. Within its pages will be exclusive information and reports on which cameras are best in all price ranges, how to use each type, how to shoot in black-and-white and color, and how to achieve top quality in both mediums.

• Rangefinder and Reflex. The battle's now raging. Which is better, the eyelevel reflex or the rangefinder 35mm camera? Here are the pros and cons of each plus information on how to overcome their shortcomings.

Using Inexpensive 35mm Cameras.
 If you plan on buying an inexpensive 35mm, professional photographer Harold Feinstein shows you what can be done with one.

 Can the 35mm Do Everything? A collection of outstanding outdoor 35mm black-and-white photographs exhibiting and discussing the finest techniques.

• 35mm Camera Comparison Charts. At a glance, you'll be able to compare every 35mm camera presently available—see which one has the features and price you want.

• Are Films Too Fast? The new high speed films employ film speed ratings of 200 ASA. Outdoors, in bright light, it's sometimes impossible to use them without overexposure. Norman Rothschild shows you how to overcome this strange difficulty.

 Eugene Smith Color Portfolio. A great photographer exhibits some of his first work in the 35mm color medium. The ale measure of Henry VII was a merric standard of that day for thirsty Englishmen around the world. For photographes the world standard in filters today is Entec.



Get perfect light transmittance first — with an ENTECO filter! ENTECO is first among all filters in accuracy of light transmittance. For color fidelity, first, and always, shoot yours through an ENTECO.

We asked an independent testing laboratory* to measure the light transmittance of ENTECO and two other popular brands compared to the recegnized transmittance standard. The results testify to the accuracy of ENTECO:

Manufacturer	Filter Type	Average Transmittance
ENTECO	Type A	99.7%
Manufacturer Y	Type A	91.5%
Manufacturer Z	Type A	72.5%

*Electrical Testing Laboratories, Inc.

ENTECO LENS HOODS block stray light, kill flare indoors or out. Useful under all conditions, they are beautifully machined of Duraluminum with a satin finish and lined with non-reflecting black felt. Available in all types and sizes, priced from \$1.40.





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the last word

Quick, the cake mixer . . .

Sirs:

Joe Schneider (MODERN, Jan. 1955, p. 17 and 18) may like his coloured pipe cleaners and water squirting fire engines, but give me that old kitchen mix master every time.

Enclosed is a dreamy shot of my daughter, Diana, just after receiving



a chocolate covered mixer from her mother, who was icing a cake at the time. I happened to be cleaning the lens of my Rolleicord on the kitchen table so quickly racked the lens full forward and snapped. The only light was from the sun through a nearby window and the exposure was one hundredth of a sec. at f/8 on Ilford FP3. Calgary, Canada Norman E. Brown

What You Thought

Sirs:

I read photo magazines published in four countries—but your group of exposure articles (June 1955 issue) is the finest *practical* and *useful* treatment of this or similar subjects I have read in some 10 years.

S. Norwalk, Conn.

F. G. Heller

Sirs:

This one issue of MODERN PHOTOGRAPHY (June, 1955) is an exposure handbook that would be worth a dollar or more of anyone's money.

Clayton, N. Y. Hester Adams

Sirs:

Your snapshot exposure guide (MODERN, June 1955) was very interesting. However, it was all in blackand-white. Color should have been equally given.

Lafayette, La.

N. A. Bush

Sirs

Optical Company, Inc.

SMITH ST. ROCHESTER N. Y.

Up until now I never used a meter nor do I at present own one mainly because I felt they were too complicated. You have thoroughly convinced me I can use one and even now I can't

(Continued on page 24)

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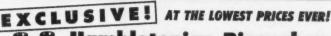
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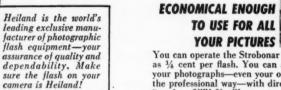


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THE LAST WORD

(Continued from page 20)

wait until I get mine and really start taking pictures. Such articles as this are really wonderful.

Whitestone, N. Y. Muriel Austin

Sirs

My congratulations on the finest treatment of a confusing subject that I have found in my rather wide search into the subject. Many points that I have been vague on (or puzzled by) have been clarified.

Your color section is the best. And the column Books in Use is excellent. I like the selection of the authoritative book and then additional readings. Oak Park, Ill. Chester Hart

Sirs:

I enjoyed the article on exposure meters. I noticed on page 48, photos 9 & 10, that the incident light attachment is shown installed backward. If you will look on the back of the PR-1 you will see where the square cut corners go. The rounded cut out is to fit the meter indicator window. Strasburg, Colo. Robert W. Edelen

• Thanks, but the attachment works either way.—Ed.

Jazz in London

Sirs

I must gently and politely disagree with your distinguished contributor Arthur Kramer (Tri-X Assignment, MODERN, Jan. 1955) if he believes that high shutter speeds are essential when photographing jazzmen. Since I don't



have Tri-X, or a fast lens on my Retina 1c, I have to try, and quite often manage, to stop jazzmen at 1/10, even 1/5 second at f/3.5.

This picture was taken in London's Florida Club and I am sending it to you because I think it illustrates well the fantastic speed of modern materials. I rate Ilford HP3 under these circumstances as having a Weston speed of 1,600.

My method is to expose HP3 for 1/10 sec. at f/3.5 and develop it for three hours in 1 part stock Promicrol plus 4 parts water at 68F. As you can see the picture was taken "against the light," said light consisting of distant and very dim bulbs.

London, England

W. G. Penny

MODERN PHOTOGRAPHY

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235 FOURTH AVE., NEW YORK 3, N. Y.

DeJUR 8mm Movie Projector



The DeJUR "500" is an 8mm movie projector featuring a three position main control switch which trol switch which can be operated in conjunction with a floor or table lamp plugged into the back of the unit. When the unit's switch is pushed all the way automatically goes

pushed all the way up, the room lamp automatically goes off, and the projection lamp lights and the show starts. When the projector is stopped by throwing the switch down, the room light automatically goes on. To further simplify operation there is a swing-out gate which facilitates threading and permits ready cleaning of the projection aperture. Other features are: only three projector adjustments; coated lens, lamp and film are cooled by a blower located near the base of the projector; lamphouse is ribbed to dissipate heat; power rewind; and 300-foot capacity reels are attached to the projector by professional type safety catches. The DeJUR "500" is finished in three colors with satin trim. Price, \$69.95. For more information, write: DEJUR-AMSCO CORPORATION 45-01 NORTHERN BLVD., L.I.C. 1, N. Y.

Pan Film for Polaroid Cameras

Pan Film for Polaroid Cameras

Panchromatic film in two speeds is now available for Polaroid Land cameras. The films are: Polaroid PolaPan 400 Land Film, which the manufacturer claims has an equivalent ASA rating of 400, and PolaPan 200 with an equivalent ASA rating of 200.

According to the manufacturer, the new pan film has a wider exposure latitude and greater sharpness than the standard Type 41 orthochromatic films for Polaroid Land cameras. It will capture detail in shadow areas of contrasty subjects without blocking up the highlights, and make skin tones appear more true-to-life. If the Polaroid Pathfinder Land Camera (Model 110) with f/4.5 lens is used with the 400-speed film, (Continued on page 26)

SELECT THE POWER PAK THAT FITS YOUR NEEDS WITH THE HEILAND STROBONAR IF YOU TAKE A LOT OF PICTURES PRO PAK. It's built for heavy-duty use! Powered by one 510 volt battery to give 1600 or more flashes-less than one cent per flash! It recycles to full power in 2 to 4 seconds—almost as fast as you can advance film! The Pak is only 2"x3%"x6½," small enough to slip in your coat pocket, completely out of the way! IF YOU TAKE AN **AVERAGE NUMBER OF PICTURES** D PAK. It gives you the most economical battery use! Powered by four 20 cent photoflash batteries that give up to 300 flashes—about 4 flashes for one cent. You can belt the handy shaped-tobody Pak around your waist or sling it from your shoulder. Just loosen one screw to slip new batteries in the Pak. The Strobonar Seven is IF YOU TAKE the Strobonar Seven is economical to operate, is economical in price. Ask your photo dealer for a free demonstration, or write now for **INDOOR PICTURES** AC PAK. It's the most economical method of shooting indoor flash photographs. Powered by ordinary household current—plugs in any household socket. Two 10 foot cords let you move free booklet. freely around any room. Prices from \$5595 with Pro Pak less battery.

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NEW PRODUCTS

(Continued from page 25)

the manufacturer says that excellent pictures may be made at night in a living room or kitchen with average lighting by using an exposure of 1/25 at 1/4.5 or 1/5.6.

t/4.5 or t/5.6.

The new pan film is presently available in the large size for the Speedliner and Pathfinder models, and will shortly be available in the smaller size (Highlander model). Price of film, \$1.98 per 8-exposure roll of Polaroid PolaPan 200; \$2.19 for the 400-speed film. For additional information, write: POLAROID CORPORATION CAMBRIDGE 39. MASS.

Edixa Stereo Camera



A coupled super-imposed image type rangefinder is featured on the new Edixa stereo camera. Called the Edixa Coupled

Rangefinder Stereo Camera model IIA, it has two matched f/3.5 35mm Steinheil Cassar lenses and focuses from 3.3 ft. to infinity. There are two coupled Pronto shutters with speed settings of bulb, 1/25, 1/50, 1/100 and 1/200 sec. Built-in flash synchronization is provided for both regular and electronic flash. Other features are: rapid wind lever which transports film and cocks shutter, double exposure prevention, body shutter release at top of camera, accessory shoe, direct eye-level viewfinder, automatic exposure counter, cable release and tripod socket. Price of Edixa Coupled Rangefinder Camera model IIA, which is finished in satin chrome and Cassar lenses and focuses from 3.3 ft. to which is finished in satin chrome and black morocco leather, \$79.50. For more information, write:

CAMERA SPECIALTY COMPANY 705 BRONX RIVER RD., BRONXVILLE, N. Y.

C.O.C. Dual-Beam Folding Reflector



The C.O.C. Dual Beam Folding Reflector is a compact, lightweight reflector for C.O.C. metal flash guns. It folds into pocket size and can be

locked into two positions when shooting. One reflector

positions when shooting. One reflector position is for concentrated light, the other for a more even light spread.

Made in the U.S. of stainless steel, the manufacturer claims that the reflector is rust proof. Price of reflector alone, which fits all C.O.C. metal units, \$2.95. The reflector can also be purchased as part of C.O.C. all-metal Pocket Flashgun Model PEF for \$10.95. with Model PEFGC part of C.O.C. all-metal Pocket Flashgun Model PF for \$10.95; with Model PFBC (supplied with battery) for \$16.50. It is also available with C.O.C. plastic Pocket Flashgun Model PFJ for \$7.95, or Model PFJBC (with battery) for \$11.95. For additional information, write:

CAMERA OPTICS CORP.
101 WEST 47 ST., NEW YORK, N. Y.

Ansco 35mm Easy-Loader

Ansco 35mm Easy-Loader

The new 35mm Anscochrome high speed color transparency film is now available in bulk in a special daylight loading package. Called the Ansco 35mm Easy-Loader, it contains eight 20-exposure lengths of 35mm Anscochrome, tongued, notched and ready for daylight loading, thus eliminating the need for an accessory bulk loading device. In use there are only four basis steps: 1. Thread film on spool of 35mm magazine. 2. Place threaded magazine in package, replace cover and insert winding knob. 3. Wind knob 40 half-turns. 4. Lift out fully loaded magazine. Film in the loader is factory dated and factory sealed in a special climate-proof factory sealed in a special climate-proof foil and plastic pouch to assure fresh-ness. Price of Easy-Loader, \$9.95. Ac-

(Continued on page 28)

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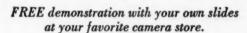
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NEW PRODUCTS

(Continued from page 26)

cording to the manufacturer this constitutes a saving of more than 30 per cent on each 20-exposure roll. For more information, write: ANSCO

BINGHAMTON, NEW YORK

New Elgeet Movie Lenses

Two new Elgeet telephoto lenses for 8 and 16mm movie cameras are available, bearing available, bearing the name Cine-Navitar—a new trademark name which will identify all of Elgeet's custom line of movie lenses. A distinctive crest transhers identify on each lens iden-tifies the new series, which has the same cata-



logue numbers as the present custom models. The new lenses are the Cine-Navitar 38mm, f/1.9 telephoto for 8mm models. The new lenses are the Cine-Navitar 38mm, f/1.9 telephoto for 8mm cameras (see illustration) and the Cine-Navitar 3-inch, f/1.9 telephoto for 16mm cameras. Both feature focusing mount, click stops, satin chrome finish, and are hard coated. The Cine-Navitar 38mm, f/1.9 lens has a depth of field scale, retaining ring for 21.5mm filters, and its size permits simultaneous use on turret cameras with Elgeet wide angle and normal lenses. If fits all Standard "D" mount 8mm movie cameras.

The Cine-Navitar 75mm, f/1.9 telephoto for "C" mount 16mm cameras, focuses as close as 3 feet, stops down to f/22 and takes series VI filters.

Also available in the budget-priced Cinematar line are two focusing telephoto lenses: the Elgeet Cinematar 38mm, f/2.7 for 8mm cameras, and the Elgeet Cinematar 75mm, f/3 for 16mm cameras. Each has a satin chrome finsh, is hard-coated, focuses as close as three feet, and stops down to f/22. The Cinematar 38mm f/27 comes in a stand-

ish, is hard-coated, focuses as close as three feet, and stops down to f/22. The Cinematar 38mm, f/2.7 comes in a standard "D" mount, while the Cinematar 75mm, f/3 telephoto fits all standard "C" mount 16mm movie cameras. Price of Cine-Navitar 38mm, f/1.9 lens for 8mm cameras, \$49; Cine-Navitar 75mm, f/1.9 for 16mm cameras, \$73.45; Cinematar 38mm, f/2.7 for 8mm cameras, \$29.95; Cinematar 75mm, f/3 for 16mm cameras, \$47.50. For more information and a list of cameras to which these lenses can be adapted, write: ELGERT OPTICAL CO. 838 SMITH ST., ROCHESTER, N. Y.

New Tri-X Film Sizes

Kodak Tri-X Film is now available in several new sizes in addition to the 35mm, 4 x 5 film pack and 620 and 120 roll film sizes announced when the new film was introduced. There are two new roll film sizes: Tri-X roll film No. 828 at 45 cents per roll, and Tri-X Film 127 at 50 cents per roll. New Tri-X film packs are: TX 520, 2½ x 3½ inches, \$1.95 per pack; TX 518, 3½ x 4½ inches, \$2.60 per pack; and TX 541, 3½ x 4% inches (a special size), \$2.70 per pack. The Tri-X 35mm (safety base) perforated roll film includes: TX 410, roll length 27½ feet, \$2.15 per roll; TX 40, to 16 feet, \$3.50 per roll; and TX 402, 100 feet, \$5 per roll. In addition, the special 35 and 70mm 100-foot and 200-foot film sizes currently offered in Kodak Super XX Film are now available in the Kodak Tri-X, both perforated and unperforated. For more information, write: Kodak Tri-X Film is now available in

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ROCHESTER, N. Y.

(Continued on page 30)



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NEW PRODUCTS

(Continued'from page 28)

New La Belle 35mm Slide Projectors



Two new 35mm slide projectors have been added to the La Belle line, Named the Director "300" (see cut) and the Showman "300," each model is equipped with the touch system changer which automatically automatically feeds, project

feeds, projects, changes and restacks slides in proper sequence with just a touch. Other feasequence with just a touch. Other features of the units are: 75 and 150 slide capacity holders, blower cooling, 300-watt illumination, coated anastigmat lenses, lightweight aluminum construction (less than 7½ pounds complete) and the ability to handle glass and readymount slides mtermixed. Price of Director "300" with f/3.5 lens, \$59.50; Showman "300" with f/4 lens, \$49.50. For more information, write: more information, write: LA BELLE SALES CORPORATION OCONOMOWOC. WISCONSIN

Two New TDC Slide Projectors



Two new TDC slide projectors for 2 x 2 slides are available with a new feature called new feature called "wind tunnel cool-ing." They are the Deluxe Model "D" (a 300-watt pro-jector), and the Streamliner 500 (a

jector), and the Streamliner 500 (a 500-watt projector. See cut). In wind tunnel cooling a new Airflow case provides a two-inch high air chamber beneath the projector. A powerful fan in the projector coops air through an opening in the case and through the cooling chamber of the projector at high speed. The manufacturer claims this provides extra cooling for lamp, optics and slides, and prevents cardboard slides from popping or slipping out of focus under normal operating conditions. Both projectors come with a 5-inch, 1/3.5 coated anastigmat lens and the TDC Selectron Semimatic slide changer. The Airflow Case is of two-toned gray wrinkle finish to blend with the gray, die-cast aluminum projector. The manufacturer claims the case is scuff-proof, scratch resistant, and that marks may be wiped off with a damp cloth. There is storage space for six or more Selectrays in the case. Price of projectors, including cases, TDC Deluxe Model "D," \$74.75; the Streamliner 500, \$79.75. For additional information on the equipment, write: equipment, write:
BELL & HOWELL COMPANY
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Soligor Telephoto Lens for Argus



The new Soligor 135mm, f/4.5 is a Japanese tele-

Japanese telephoto lens for Argus C3 (see cut) and C2 cameras. In position the three element lens couples to the lens of the camera. Initial adjustment (which is done by the owner) locks the lens securely in place and, according to the manufacturer, no further adjustment is needed. For proper viewing, a compensating metal field mask fits over the viewfinder. Other features are: click stops, depth of field scale, front and rear lens caps. Price of Soligor (Continued on page 32)

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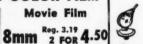
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(Continued from page 30)

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The Dejur Voy-The Dejur Voyager 8mm roll film camera features ease of operation and loading. Equipped with an f/2.8 universal focus 13mm lens, there is an exposure chart for black-and-white

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film is loaded.

film is loaded.

To start the camera the operating button located on the front is pulled downward. Pulling it all the way down locks it in the "run" position. Pushing the release up from the "stop" position permits just a single frame to be exposed for animating titles or special effects. Also featured is an optical finder with two pointers visible inside for parallax correction. Price of the Voyager, \$54.95. For additional information, write: write:

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Revere 35mm Slide Projector



The new Revere auto-magazine auto-magazine
35mm slide projector operates on
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and is known as
the Revere "553"
when equipped
with a 300-watt
lamp. as Revere lamp, as Revere "555" when equip-ped with a 500-watt

ped with a 500-watt ped with a 500-watt matic or manual operation, it has an automatic index setting which permits showing slides in sequence without touching the selector knob. A single flip of the finger on the transport lever automatically advances slides, fades them in and out and returns them to the proper magazine tray slot. The magazine tray is also a tabbed permanent file for 36 slides of all type mounts. A 15 tunnel tilt prevents spillage of slides. When set for manual operation the Revere "553"/"555" shows slides in sequence, skip-selected, and permits reprojecting slides already viewed. The number of the chosen slide is always clearly visible in the index window of

clearly visible in the index window on top of the Revere "553"/"555" projector. projector.

(Continued on page 34)

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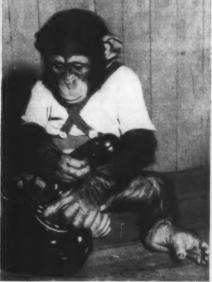
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NEW PRODUCTS

(Continued from page 32)

The new projector comes with an f/3.5 The new projector comes with an 1/3.5 5-inch coated anastigmat lens, but other focal lengths are available. There is a built-in pointer. Fingertip adjustments control tilt and leveling. A screen built into the cover permits tabletop showings. Other features are: a single knob blower-lamp switch, improved cooling system, spring latch lamphouse cover, and lamp which is in vertical position and is easily replaced. Price of either model with Irish linen cover which slips over the projectors and featens with over the projector and fastens with Sure Grip locks to become a complete carrying case, Revere "553," \$69.50; Revere "555," \$79.50. For more information, write:

REVERE CAMERA CO. 320 EAST 21 ST., CHICAGO 16, ILL.

New Improved Jen-Dip



A plastic beaker which can be pinched to form a pouring snout, and an improved soluan improved solu-tion are the main features of the new Jen-Dip. Jen-Dip Blue La-bel is for coating clear bulbs so they are balanced for daylight-type

daylight-type color film. Jen-Dip Red Label is available for coating bulbs for use with tungstentype color film. After the bulbs have been dipped and the excess solution is poured back (see illustration), the bottle is capped and the beaker, when placed over the bottle, forms a second cap. All new packages of Jen-Dip will have a chart showing guide numbers for a variety of flash bulbs when used with Kodachrome or regular Ektachrome. When using the new E135 Ektachrome and Anscohrome, the manufacturer of Jen-Dip recommends that you merely double the guide numbers given. The chart can also be secured free by writing to the address below and enclosing a self-addressed stamped envelope. According to the manufacturer, a 4-ounce bottle of Jen-Dip will coat 400 bulbs. Price of 4-ounce bottle of either Jen-Dip Blue Label or bottle of either Jen-Dip Blue Label or Jen-Dip Red Label, with the new beaker, remains at \$1.50. For additional information, write:

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Makro-Kilar Lens for Rectaflex



The Kilfitt Makro-Kilar lens Makro-Kilar lens which permits taking closeup and distance pictures without supplementary attachments is now available for the

35mm single lens reflex Rectaflex camera. The lens replaces the regular lens on the camera, and comes in two models. Makro-Kilar E focuses from infinity to about five inches from the subject and provides maximum image-to-sub-ject ratio of 1:2; Makro-Kilar D pro-vides focusing from about 3 inches to infinity and has a maximum image-to-subject ratio of 1:1.1.

subject ratio of 1:1.1.
Made in Germany, the Makro-Kilar f/3.5, 40mm lens is a four-element compound triplet which contains Lanthan glass—a new type of optical glass, developed recently. It is finished in black and chrome and has three scales; a distance scale, a scale that automatically indicates image-to-spiker ratio as the indicates image-to-subject ratio as the lens is focused, and a third scale that automatically indicates the amount of exposure increase when taking close-ups, eliminating computation. Other (Continued on page 117)

MODERN PHOTOGRAPHY

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modern STEREO

BY TOMMY THOMAS



Here's a method of taking ultraclose-up stereos without special close-up attachments

How would you like to be able to take close-up stereos down to as close as twelve or fifteen inches away... without needing much other equipment than your present stereo camera and a tripod? Well, there's a very simple way!

Several columns ago I talked about a number of different systems of taking stereo close-ups, each system with its inherent advantages and disadvantages (perhaps the greatest disadvantage of all being the need for auxiliary close-up equipment). Normally, according to all the so-called "Rules and Regulations" of stereo, you are limited to remain at least thirty inches away

from the closest object that you are photographing. By attaching Stereo Angle-Lenses to your camera (a combination of close-up supplementary lenses and prisms that "toe-in" the view of the camera toward your closeup subject) you can get much closer. It's a good enough system, but with certain drawbacks as brought out in the column of last May. Using a Stereo Slide-Bar (another system described in the May column), together with regular "2D" close-up lenses, is another fine method: but it too is somewhat complicated by the need for auxiliary apparatus. Also, with the Slide-Bar system your subject material is limited to inanimate objects . . . a severe limitation indeed.

Most of these close-up methods seem to be designed for use by the professional photographer or, at the very least, by the advanced amateur. There seems to be nothing available yet "for the rest of us" who are not especially interested in going to a lot of extra trouble and expense. So, having worked successfully with the various close-up attachments over the years, I've finally settled down to an extremely simple system of my own. It by-passes the ordinary methods and though admittedly not as stereoptically sound as most of them, it very definitely works for my purposes.



If you want an extreme close-up such as a stereo shot of the parakeet alone, you can make it quite easily (see text).

Nowadays, when I wish to take a stereo photograph closer than thirty inches, I just go ahead and take it without any auxiliary lens attachments whatever!

Here's the method: Stop your lenses down to as small an opening as is possible (f/22 or even smaller if you can) and take advantage of the extreme depth of field possible with the short focal length lenses (35mm) on your stereo camera. With an opening of f/22, and with the rangefinder-distance scale set down to 21/2 ft., your camera should be easily in focus all the way down to eighteen inches. And as close as that is for stereo, you can sometimes get even closer. Some cameras—like one of my Realists—go right on past f/22, down to about f/32 (f/32 is not marked on the camera as such, but it's readily apparent when your camera lens-settings go on an eighth of an inch or so beyond f/22). When this is possible, you'll be in focus on down to about twelve inches or even a bit closer. No auxiliary close-up lenses are necessary in either case, just stop down as far as possible. This is the First Rule.

There's still the question of "toeing in," but save that for a little later (where we'll by-pass it completely). First, let's look at the shot, above, of pretty Barbara Ann Gregory holding a parakeet on her finger. Now imagine that you would like an ultra-close-up stereo of just the bird itself. Very simple, just have the girl step over closer to the dark drapery hanging in

(Continued on page 40)



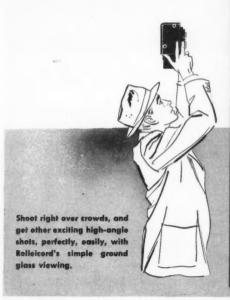




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Here's the same stereo mounted two ways. Top: slip-in mounting in a close-up mask. Bottom: pushed apart and hand-mounted. See page 40 for a third method.





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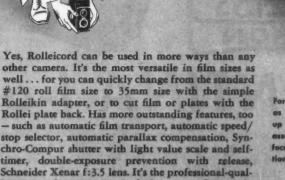
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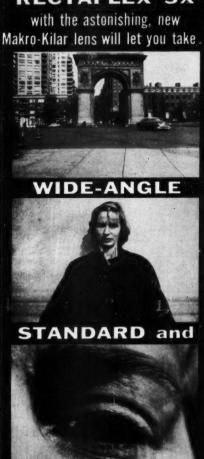
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MODERN STEREO

(Continued from page 36)

the background . . . bringing us to Rule 2: always have a solid-color backaround in your close-up stereos, and don't include much (better still, not any) extraneous material around and behind your main subject.

Also, it's best to limit yourself whenever possible to subjects that are not too wide. In fact the area of usable slide is a centered vertical two-thirds of the so-called "normal". This is preferable so as to cause the least amount of overlapping annoyance when mounting and viewing the finished stereo (mounted) in a close-up size mask, by the way. So, Rule 3: stick to photographing close-up subjects that stay as much as possible within the middle two-thirds of the viewfinder area. This is not as limiting as it sounds, but essential if you want the very best results possible with this "casual" svstem of close-up 3D.



Here's the parakeet stereo hand-mounted in a taped-narrow mask (see text).

It's the combination of these three "rules"-small lens opening, solidcolor background and staying in the middle two-thirds of your field-that makes it possible to take these stereo close-ups without the need for special toe-in prisms and/or other close-up attachments.

About mounting

Now look at pages 36 and above for the black and white reproductions made from my original parakeet closeup stereo (taken with a bare SM flashbulb and fifteen inches away at f/27). The three sets of left-right pictures represent the same stereo mounted three different ways.

Top pair (page 36): Ordinary slip-in mounting will give you the effect, naturally, of the hand and parakeet being way in front of the close-up mask (window). As long as you use a solidcolor background, this shouldn't be too objectionable in viewing.

Bottom pair (page 36): If you should wish to make an improvement in mounting with only minor effort on your part, you can hand-mount the (Continued on page 44)

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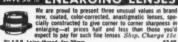
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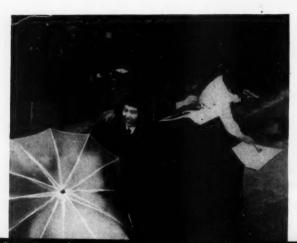
"I tried it myself"

Twos, threes or fives? In the pictures below, and on the lower left, opposite, we see people or objects in "twos"—two nuns, two umbrellas, two bottles. Such repetition of forms often can make an ordinary situation into an unusual picture. However, no matter how many similar shapes are included in a picture, they don't necessarily have to be identical. If you look closely, the nuns' poses are slightly different and even the bottles are not exactly alike. Similar forms may differ because of contrasting tonal qualities: in the case of the umbrellas, one is dark; the other, light. Some variation will keep the picture

with repeated forms—numbering two, three, five, or more—from being monotonous.

"I Tried it Myself" is a monthly contest for black-and-white prints. Anyone may submit any number of pictures, but they should be 4 x 5 or larger. Your name, address and all technical data must appear on the back of each picture. Please enclose a stamped (first class postage) self-addressed envelope if you want us to return prints we cannot use. All entries are considered for use elsewhere in the magazine. Send them to the Columns Editor, MODERN PHOTOGRAPHY, 33 W. 60, New York 23, N. Y.





SECOND PRIZE \$15. Sisters Simonizing a dark automobile posed problem of exposing for contrasty subject. There were few middle gray tones, so David Strickler, of Boston, Mass., decided on f/11 and 1/50 second with Super-XX film in his Rolleiflex.

≺ THIRD PRIZE \$10. Will the observer's eye get right
to the point of your pictures? There'll be no question about it when you let details in the scene work
for you. Here the shape of umbrellas and curve of
curb set off A Class in Watercolor Painting, by Robert
John Anders, F.P.O., San Francisco, Calif. Contax,
50mm lens, Super-XX. Exposure data unknown.



MODERN
PHOTOGRAPHY'S
MONTHLY CONTEST
FIRST PRIZE \$25
SECOND PRIZE \$15
THIRD PRIZES \$10

\$25 FIRST PRIZE. Move in close to frame the action. Sidney Kaplan, New York, N.Y., eliminated distracting street details in order to concentrate on boy's struggles with old jalopy. Kaplan used a Canon, f/5.6, 1/60 second, Plus-X film.





THIRD PRIZE \$10. If you want to △ make a non-professional model feel happy in front of a camera, don't direct her to hold a stiff pose. Simply chat with her, then shoot when she's at ease. Al Brenner, of Brooklyn, N.Y., used Retina, f/16 and 1/60.

Wallace Litwin uses his Canons (Serial Nos. 50,065 & 50,095) for his

Magazine Assignments

Wally chose Canon because it gives complete versatility for shooting under the most varied conditions. And, it is sturdy enough to take the "beating" a globe-trotting photographer usually gives his cameras. Wally uses both on his assignments (for Coronet, This Week, Colliers, etc.), each with a different focal-length Canon lens, or he loads one with color, the other with b & w film.



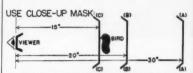
Wally found the Canon Copying Unit ideal for this extreme closeup of a fly beside the head of a pin. He uses the Canon extension tubes in combination to achieve image magnification. His 50mm. f.1.8 lens was used here with a single flood for lighting.

MODERN STEREO

(Continued from page 40)

stereo-pair of films (with cellulose tape) so that they are pushed away from the center of the mask as much as possible (see Diagram 1, in my October, 1954 column on special handmounting). Doing this has the effect of moving the stereo window in closer toward the subject, making viewing that much more comfortable.

Picture, page 40: Occasionally a close-up slide will be extra good enough so that you'll want to go to the special trouble of blocking off the vertical sides of the mask-windows about an eighth of an inch or so, before handmounting the stereo pair of films. This has the effect of bringing the stereo window in to about fifteen inches away, putting it very comfortably in front of the subject for the first time (see Diagram below for profile comparison of all three positions).



(A)SLIP-IN MOUNTING (B)PUSHED APART (C)APART + MASKI

Compare this profile sketch of parakeet shot with different mountings shown on pages 36 and 40. Note how stereo window gets progressively closer.

What the different mounting procedures add up to, in other words, is a difference in viewing comfort... this provided by the varying degrees of mounting control used. You.don't have to bother with any (and you can get along quite happily) or you can go to the "trouble" of quite a bit—it's entirely up to you.

About your exposures

Naturally, since you'll be using your smallest lens openings, your shutter speed will have to slow down accordingly so as to give you the same resultant exposure. Outdoors in bright sunshine it's just a matter of using a tripod and changing from f/6.3 at 1/50 of a second (or something similar) to f/22 at ½ of a second. If your camera allows you to go smaller than f/22—to what I've estimated to be about f/32—then use a ½-second exposure. Naturally, if your subject material is predominantly light or dark, then you'll have to change your shutter speeds half an exposure to correspond.

Indoors it's even easier. And, unless you're using photoflood lighting instead of flash, you won't especially need a tripod either. Regular methods of lighting were found to be difficult—since the camera was so close to the subject as to be in the way—so I devised the system of holding the bare flashbulb directly between the two camera lenses, actually touching the camera viewfinder in front. Sunshades around the lenses—small enough to

(Continued on page 46)

The Stackpoles take their Canons Serial Nos. 78291 & 77576) on an Underwater

Vacation

Peter and Hebe Stackpole are the nation's mc enthusiastic underwater-photography fans! Naturally, they always take their Canons with them, because ... whether exploring the ocean's sub-surface or the earth's outer strata, Canon's simplicity of controls and complete versatility make it the professional's No. 1 choice!



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Leo Stashin takes his Canons (Serial Nos. 81,959 & 85, 561) on a Circus

Assignment

Leo prefers a Canon to catch the glitter and excitement of the "Big Top" because of its versatility and unerring performance under the toughest conditions. He uses both his Canons on these projects . . . loading one with color; the other with B & W. Or, he often uses different focal length lenses

on each-ready for immediate action!

Leo uses his Canon Auto-up for extreme close-up (still using Canon's rangefinder for focusing).

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MODERN STEREO

(Continued from page 44)

permit putting an SM flashbulb between them-solved the problem of light flaring directly into the lenses. Fortunately the SM flashbulb worked out perfectly, exposure-wise, at the small lens-openings required. This was a bit of luck because these SM bulbs. being virtually "empty" and perfectly clear, permit the photographer to use his viewfinder in the regular manner, looking right through the clear flash-



Note clear SM flashbulb held between the two stereo lenses, in front of the viewfinder. You'll also need lens shades.

bulb itself (photo above). Of course, you'll have to remember to close your viewing eve just a moment before the bulb goes off, if you don't want to be temporarily (but harmlessly) blinded by that part of the flashbulb light that backs up through the viewfinder. Use the table below to determine the proper lens openings with any of the given distances.

BARE-SM FLASH TABLE

12 inches-f/32

15 inches-f/27

18 inches—f/22

21 inches-f/19

24 inches-f/16

You'll be surprised at how often you'll be using this ultra-easy method of taking close-up stereos, once you've given it a trial. Remember though, this system is made to stress effortlessness, and is designed for those of you who absolutely refuse to go to any special-apparatus trouble when taking stereo photos. There are "better" methods (as described last May), but they all involve extra work and special auxiliary apparatus. Here we have the casual system . . . no muss, no fuss, no bother. I use it all the time myself and think it's wonderful.—THE END



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ROLLEI HANDBOOK, by Alec Pearlman. 169 pages, many illustrations. Rayelle Publications, Philadelphia, Pa. Price

Alec Pearlman, in nimble writing, a series of extraordinary diagrams and step by step illustrations, lavs down the rules on the mechanical operation of the Rolleiflex. This is excellent.

However when it comes to describing what makes a good picture, it isn't that simple. And this is where Pearlman stubs his toe. Having finished with the mechanical aspects of the camera, he continues with rules such as . . . "... a low viewpoint will stress the dignity of a subject; a high viewpoint will show it as insignificant . . ." Old wives tales such as these are unfortunate. Especially when they appear in an instruction manual likely to be taken quite literally by the beginner. But this venturing into esthetic ground seems to be indulged in by most camera instruction manuals. So if the reader will be wary, the Rollei Handbook can be recommended as a fine pocket-size guide to the mechanical use of the Rollei.—HAROLD FEINSTEIN

THE COMPLETE AIRBRUSH BOOK, by S. Ralph Maurello. 159 pages. Wm. Penn Publishing Corp., New York. Price \$7.95.

Photo retouching, product design rendering, technical illustration, etc.. often can be aided considerably by judicious use of the airbrush. This instructive manual-a course in airbrush techniques-provides simple exercises and working methods for the beginning airbrush student.

In analyzing the working procedures of well-known artists, Ralph Maurello has included numerous, well-detailed illustrations. Happily, these have been placed on the same page with corresponding text.

Although the chapter on photo retouching is admittedly brief, and concerned only with retouching on the positive print, the methods outlined are valuable to the student of photo retouching. He should be cautioned, however, not to use the airbrush indiscrim-

inately as a camouflage for poor photography!

Models of airbrush equipment are shown, and their functions described. But it would have been to the student's advantage had more reference been made to the excellent, end-of-the-book chapter on airbrush maintenance.

FRANCES TORBERT Miss Torbert, formerly art director for the Architectural Record and American Photography, currently is head of design for John Wiley and Sons and Book Production.

These and other books are available through MODERN PHOTOGRAPHY Book Store; see advertisement on page 99.

A PICTURE!

By R. Gray

. . . Ever take a picture you thought was "terrific"-wanted to sell it . . . but didn't know how or where?

Sure you have, haven't we all? Well, it's not as tough as you might think.

There are two terrific books out on the subject, and, just by chance, I can tell you where to get them. But first, let me tell you about them.

The first is "How To Make Money In Photography." by Eugene M. Hanson ... a man who really knows his stuff.

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. . it's such a terrific buy at \$4.50 that thousands of copies were sold before publication.

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Here's how to take your camera

underwater!

How to begin, what you need, what it costs, how to use it ... by Peter Stackpole and Modern's editors





LAVERNE PEDERSON



FLASH proves that the bottom of the deep blue sea can glow with warm, beautiful colors, if you can only get light there to show them up.

DEPTH changes colors, filtering out red and yellow as you descend. This anchor rider was down about 20 feet. Light came only from the surface.

SHALLOW water, bright sun, white bottom permit exposures very close to those on the surface. Yet even here, the girl's suit looks faded.



TROPICAL WATERS teem with brightly colored fish, plant life, and corals. Patience produces results like this.



SWIMMING POOL is best place to start underwater shooting. Add some odd props for interest, color.

ELECTRONIC FLASH is logical light for serious work in ocean depths where every minute counts.



Anyone can take pictures underwater. Try it this summer for a new photo thrill. Here's all the basic information.

IF YOUR VACATION takes you near water this summer, there's a real treat in store for you—photography underwater. And when we say "water" we mean it in the widest sense. Your local swimming pool, a clear lake, a quiet bay, or the open ocean—any one of them can be the means of combining at low cost two wonderful summer pastimes, swimming and picture taking. As a matter of fact, you don't even have to be an expert swimmer.

We can thank a Frenchman, Captain Jacques Yves Cousteau, for generating much of the interest in underwater photography. His great book, *The Silent World*, told of the wonders of undersea exploration. His co-invention, the Aqua-Lung, made it possible for the first time to go below and stay there without cumbersome diving suits.

Such movies as Under the Red Sea, Hunters of the Deep, and 20,000 Leagues Under the Sea have excited millions of viewers in this country. Today, wherever you look there are articles in magazines and newspapers about skin diving, frogmen, undersea hunters, and what have you. In many of these, the elaborately outfitted participants are chasing some luckless undersea creature with knife, spear or gun. And they're all copiously illustrated with pictures. Question: how do you take the pictures?

That's what this section is about. It's for people who have never taken a picture underwater but think that it might be fun to try (without sharks and other monsters), if it's not too difficult and expensive.

What's the best camera to use?

Your underwater camera should be compact. It should take many pictures without your having to reload. Coupled film advance and shutter wind are a tremendous advantage, if not a virtual necessity. The logical answer is the 35mm or semi-automatic twin-lens reflex. For sheer enjoyment, the 8mm or 16mm movie camera is a "natural." for the movement and vitality of the underwater world are far more exciting in movies than in stills. The 8mm cine camera is quite satisfactory. The underwater scene is narrow; your vision is limited in distance; everything has a slightly unsharp look about it anyway, except close up. Add to this the economies in costs of the 8mm, and it makes sense for this type of work. (Of course, if you have professional ideas in mind, better stick to 16mm.) A "normal" focal length lens will do, but if you have a wide-angle lens for that movie camera the results will be much better. Once set for a scene, you'll probably not have to refocus for distance.

You can take pictures underwater with the normal 50mm (more or less) lens on a 35mm camera, but you'll get better results if you can attach a moderate wide-angle (35mm focal length) or wide-angle (28mm) lens.

Underwater objects look about 25 percent larger than they really are. Your lens takes in a somewhat narrower angle than it does on the surface. So, to get in the same amount of subject matter you have to back off further. That's bad, for the water is full of billions of tiny particles that reflect light, and tend to make the subject lose contrast and clarity. This is least troublesome in swimming pools, worst in the open sea. So, rule one is to get as close as possible to what you wish to record. A wide-angle lens helps you to do this. Also, at any given setting it produces pictures with a far deeper zone of sharp focus than would a 50mm lens. This reduces or eliminates the need to focus for distance. Incidentally, when underwater, the focusing scale should be set at about 75 percent of the actual distance. Only ground-glass focusing is accurate, and rangefinders are almost useless through a mask and housing.

Though 28mm wide-angle lenses are desirable they present one problem underwater—only the center area of the picture is sharp, while the surroundings get increasingly blurred towards the edges. This does not indicate a bad lens, nor does it ruin the average picture, but it would be undesirable in scientific work.

Which film should you choose?

Water cuts down the contrast in the scene, and the more water between camera and subject the less contrast you will get (also, with color film, the scene gets bluer as the camera-subject distance increases). For color, Kodachrome gives excellent results as it is inherently contrasty—in bright light it is a good choice. Where light is dim, or fast action must be stopped, take advantage of the new high speed Ektachrome (35mm) and Anscochrome (35mm and rolls). Color movies are particularly effective, for as the depth changes so do the light and colors. Filters? We'll discuss this in more detail later; however, in shallow waters a Skylight filter will cut down some of the excessive bluishness.

You'll get better results in black-and-white with a medium speed, moderate contrast film such as Kodak Plus-X or Ansco Supreme than with the super high speed films, which give softer contrast. (For more details, see Exposure, page 62.)

A free book for you... If you are interested in learning more about underwater photography, you can get a free copy of the \$3 book, UNDERWATER PHOTOGRAPHY, by Schenck and Kendall, simply by entering a 2 year subscription to Modern Photography at the rate of \$7. Please send subscription order together with your check or money order to Free Book Editor, Modern Photography, 33 W. 60 St., New York 23, N. Y.

Equipment: what you



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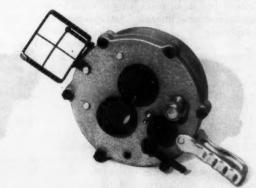
Fenjohn-Bell & Howell 16mm movie, \$1,990 incl. camera



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Ondiphot Rolleiflex, housing only, \$150



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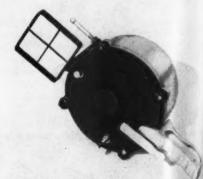
Mako Leica, \$97.50



Seaworth Aqua-Eye, \$4.95



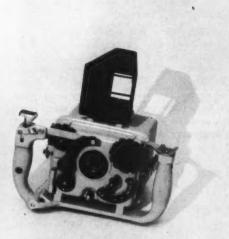
Mako Brownie Holiday, \$29.95, incl. camera



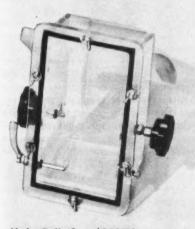
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LARRY PRITZ



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TO TAKE YOUR CAMERA underwater you need two things: first, swimming equipment to get you beneath the surface; second, a watertight housing which protects the camera yet allows operation of the picture taking controls. Let's look at housings first. At left are a dozen representative kinds, ranging in price from \$4.95 to \$1,990. In construction they vary from a simple transparent rubber bag built around a glass face plate, to a massive metal combination camera-housing unit. There are others, too. Which kind to buy? That depends on your needs.

For such well-known grade-A cameras as the Leica, Canon, Contax, Rolleiflex, and Robot, there are readymade cases available from \$97.50 to \$675, depending upon the design features desired. On a more modest scale are cases for a simple box camera (Brownie Holiday) which start at \$22.95, including camera.

Should you build your own?

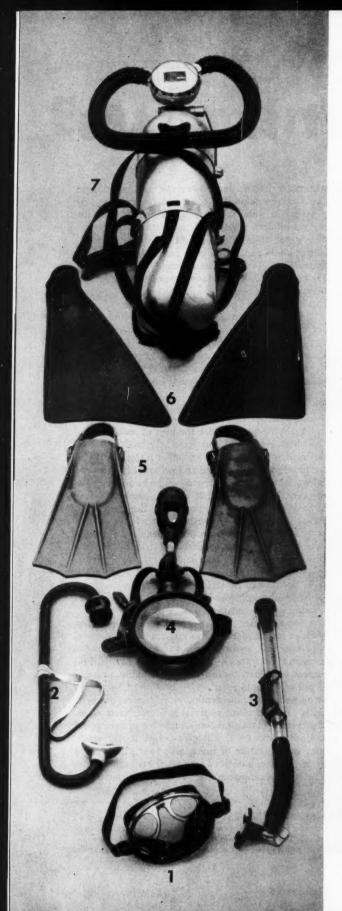
Because most of the readymade cases seem so expensive, many people consider the idea of making their own housings. Successful ones have been built of wood, plastic, iron, brass, aluminum and other materials. If you are completely fumble-fingered and without experience at careful workmanship, don't try to build a housing.

However, if you do build it yourself, here are some of the basic problems to consider. Keep the airspace in the box at a minimum. Although this article is intended for people who will be diving no deeper than about 30 feet, the housing should be designed to withstand the pressure of at least twice that depth for a safety factor. In case you are an experienced skin diver, going much below 30 feet, make provision so that the case can be pressurized with compressed air. Then, escaping bubbles will quickly indicate any leaks.

Some people prefer a case with slight negative buoyancy, which means that case and camera sink to the bottom if dropped. It seems to make more sense to have a slight positive buoyancy—if it gets loose, look for it on the surface in a boat, instead of on the bottom, possibly at a depth too great to reach.

For use at moderate depths, clear plastic, such as Plexiglas, is an excellent material for underwater cases. Its 92 percent light transmission equals that of fine optical glass. Under pressure it will give before it will crack. The one safety feature of being able to see the camera at any angle offers a decided advantage over other materials. Another advantage is that you are able to see all the

CAMERA HOUSINGS: They come in all sizes and shapes, use a wide variety of materials, have a great range of prices. These are from stock of Fenjohn Underwater Photo & Equipment Co., a pioneer in subsea photography.



UNDERWATER SECTION

camera controls and settings without difficulty. The only disadvantages are the danger of scratches on the front (handle with care), and the possibility of internal reflections. Should these occur, they can be overcome by masking and blackening some areas around the lens.

On page 66 is a general plan for the construction of a relatively simple Plexiglas housing. Remember, care and accuracy are important. Your plastics supplier can make the straight cuts on a power saw and maybe help out with some of the work.

What does it cost to get started?

Let's suppose you have a yen to try underwater photography, but have never done any skin diving, and don't care to go into major expenditures of money and energy until you find out whether or not you like it. How can you get started, if not on a shoestring, at least at a moderate cost? We suggest that you start in your local swimming pool (on some uncrowded off-day), the safest place to experiment, and the easiest place to take your first underwater pictures.

You need certain basic swimming equipment—face mask, snorkel, flippers. The face mask covers your nose, lets you see underwater. Check on the face plate. For safety it should be either clear plastic or safety glass. Many face plates are of plate glass and some look like cheap window glass. In case of a knock on something these can be dangerous. If you need glasses to see well, pick a mask which takes an accessory spectacle frame.

The snorkel is a lightweight plastic breathing pipe which you hold with a rubber or plastic mouthpiece. While you are swimming on the surface it lets you keep your head underwater to see the sights, yet permits you to breathe normally. Surprisingly, when you go below it does not fill up and choke you—your internal air pressure prevents that. It may take in a few spoonfuls of water which are blown out next time you break the surface. Although snorkels are getting fancier all the time, experienced skin divers insist that the elaborate models offer no significant advantages over the simplest types.

Flippers give you the swimming power, for your arms will be taken up with camera handling. Some are adjustable to various sizes of feet—others are like shoes, must be fitted to the individual. Take your choice, pick the most comfortable ones. Cost so far? Less than \$20.

Now for the housing. One of the strangest devices ever made is the Seaworth Aqua Eye (\$4.95), a transparent rubber bag built around a glass face plate which is held by a metal ring. Remove the glass, insert a small still or cine camera, replace the glass—it's a camera housing, usable in shallow water. Controls are worked from the outside, so it's important to use as automatic a camera

SWIMMING EQUIPMENT: (1) Squale face mask, \$4.95, with accessory eyeglass frame, \$3.50; (2) Honolulu Swim Pipe snorkel, \$5.95; (3) Explorer snorkel, \$7.50; (4) Marino combination mask and snorkel, \$14.95; (5) Healthways Webfeet flippers, adjustable, \$4.95; (6) Voit swim fins, large size, \$10.95; (7) Divair Aqua Lung, for sustained underwater activity, \$129. Equipment shown was loaned by Fenjohn Underwater Photo & Equipment Co. To see some of it in use, examine the pictures opposite.

For less than \$25 you can have a usable underwater outfit.



Virginia Tanis starts movie making with a Keystone 8mm in an Aqua-Eye rubber bag. Her swimming equipment consists of a pair of flippers, a face mask, and a snorkel. With this much you can begin underwater photography.

This one is more elaborate, easier to use, yet moderately priced.



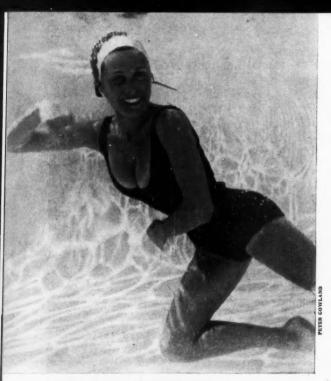
It's best to save your energy while looking for picture subjects. Special Abercrombie & Fitch air mattress, \$27.50, has hole for observation. Camera is Brownie Holiday in Triton plastic case; or, use your own camera in a good case.

Want to go deep, stay down long? Then you need expert's outfit.



ICRRY CREENES

All set for the depths with a Divair Aqua Lung, Leica in Tarzan case, light meter, Rolex watertight wristwatch. At this point, underwater photography becomes an expensive hobby, but the rewards can be exciting, great.



WITH SIMPLE EQUIPMENT and a willing model, anyone can start underwater photography in the local pool. Exposures are practically the same as on the surface (see Exposure, page 62), and on a bright day even a simple box camera can do quite satisfactory work. Once you have swimming techniques mastered, and can handle the camera in its housing, you'll be ready for more open water.

UNDERWATER SECTION

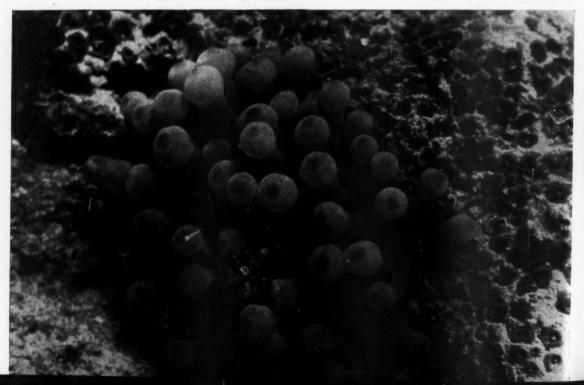
as possible. With a little 8mm cine camera, the Aqua Eye affords an inexpensive way to take a first whirl at underwater movies. If you don't trust your valuable still or movie camera in this contraption, pick up a little Brownie Holiday (\$2.95) suitable for beginning.

Still on the modest side in price, but much more efficient than a rubber bag, are the clear plastic housings designed for the Brownie Holiday. The Triton at \$22.95 and the Mako for \$29.95 (prices include camera) will surprise you with their ability and versatility. On a bright day in a swimming pool, or in shallow water over a white sand bottom, amazingly good results are possible.

Let's suppose you have a good camera and decide to get a top-grade housing for it. Do you need more elaborate swimming equipment? Actually, no. Unless you decide to go in for skin diving on an expert scale, with long stays on the bottom which require air equipment, the face mask, snorkel, and flippers are all that's necessary to go below in shallow water and shoot stills or movies at a great rate. On page 59 (center) is shown an air mattress specially designed for skin divers. The hole through permits a view of the bottom. You coast along; when you see something worth photographing, toss over a light anchor to secure the float and go below.

This article isn't about skin diving. There are books and magazines (see pages 55 and 106) devoted to the subject. However, everyone should read carefully the general safety hints which are listed on page 111.

BETTER EQUIPMENT, particularly a good camera in an easy-to-operate housing, lets you capture the beauty of the undersea world in black-and-white and color. However, in shallow water (down to 30 feet) you still don't need any more elaborate or more expensive swimming equipment than that shown at the top and center of page 59.



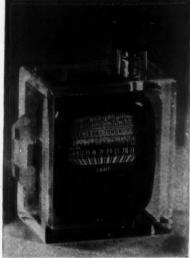


FOR THE EXPERT who wants to capture undersea excitement such as this, there should be no stinting on equipment. The outfit shown at the bottom of page 59 is suitable for extended underwater photographic activity, but must be used with skill.

UNDERWATER SECTION

Pickle jar with rubber gasket seal makes suitable underwater housing for Weston Master. Since computer can't be operated, conversion card provides data for direct readings. Foam rubber holds meter steady.





Housing-meter combinations are put out by several firms. This is the Mako-Weston Cadet, which sells for \$57.75 complete.



Gossen Underwater Exposure Meter is molded into plastic block, has its computer on the outside. Price, \$69.50. Determine your needs carefully before you convert or buy any meter.

Exposure:

GETTING CORRECT EXPOSURE underwater, down to about 30 feet, is not much more difficult than getting it right on land. On a bright day, in a white-bottomed swimming pool, exposure down to about five feet is virtually the same as on the surface. Below this depth add about one full stop more exposure. With black-and-white films this is such a negligible difference that it can almost be ignored. So, in the pool you can take a reading above water and with minor adjustment follow it pretty well below. Reflections from the bottom, sides, and the water itself lighten the shadow areas to give even illumination. For example, Jerry Greenberg's pictures (page 59) were made in a Florida pool on a bright day. Exposure for a medium speed pan film was 1/200 sec. at f/8, and development was in Kodak D-23.

In large natural bodies of water, exposure depends to a degree on the depth, the kind of bottom and the distance to the bottom, and the turbidity of the water. Here you had best take a photoelectric exposure meter down with you and take your reading as close to the subject as possible. The greater the meter-to-subject distance the less reliable the reading. Unless the meter is in a special housing, it's impossible to manipulate the computer. Reflected light meters that give direct readings in apertures and speeds (Weston DR, for example) are easiest to use. However, with a homemade conversion card inside the housing, most computer type meters can be made to read direct (see photo at top of page). The conversion card is made up for one shutter speed (let's say 1/100) and two films-color and black-and-white. Then the correct lens openings for various scale readings are written down.

It is also possible to take the computer off an old meter and mount it on the outside of the housing, so it can be manipulated in the normal manner.



Author Stackpole, foreground, heads for the boiler of a wreck off Bermuda. Here shadow detail was important.

In a pool, or over a brightly lighted sand bottom, one aperture setting may be sufficient for many exposures, even at various depths. In open water, however, conditions may change suddenly as currents move in masses of particles that cut the light and change its color.

Best black-and-white results will be had with panchromatic films in the A.S.A. 50 speed range. Be careful not to overexpose—in fact, it's best to keep the negatives on the thin side. Since water cuts down the contrast of the scene, give about 30 percent overdevelopment in a soft working fine grain developer. This jacks up contrast, gives better prints. Steer clear of "ultra fine grain" soups that give a flat, low contrast negative.

Exposure for color is a different story. Color films must be fully exposed. Everything tends to be blue underwater anyway, and even mild underexposure is likely to result in excessive bluishness.

ways to get it right

With light, bright subject and background be careful to avoid overexposure. Take meter reading for highlights.



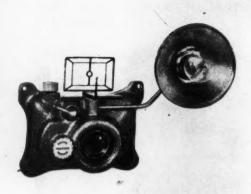
UNDERWATER SECTION

Even commercially made flashguns for underwater work look disarmingly simple. Typical example is bowl reflector with bare bulb in brass socket made by R. G. Lewis Ltd., in England.

▼



△ Electronic flash offers many advantages for serious underwater photography, but there are few units available at present. Most are custom-made and high priced. This is Mako 200 watt-second outfit. Price. \$350.



Home-made flashgun used by Kendall and Schenck consists of ordinary brass-chrome reflector, brass socket, waterproof connection to battery-capacitor power pack inside camera housing. Bulbs are in net bag in background.



Flash: it's

WITH FLASH you can get underwater pictures which would be impossible to take otherwise. But it's not easy. You are throwing light through water, not air.

Always use the largest bulbs possible. Guide numbers operate differently than for above-water flash. Ordinarily you would divide the guide number (find it on the bulb carton) by the flashbulb-to-subject distance in feet—the result is the correct lens opening to use. Underwater you divide the guide number by the distance in feet from bulb to subject and back to camera.

Flash underwater has a very limited range, due mainly to the presence of plankton and other particles which absorb and block out a lot of the light beam. So, when the water is full of this stuff, the more light you pour on, the more you are lighting up particles, and the less you will see of your subject. So, try to avoid having the flash on or near the camera, as this frontal lighting will light up all the particles between the subject and the camera. Top and side extension lighting are preferred.

The worst feature of all is that the amount of particles in the water may suddenly change, from hour to hour, or within fairly short distances. An exposure sufficient to light a subject 10 feet away (10 feet, that is, from bulb to subject to camera) under one set of conditions might be totally inadequate the next day.



Flash on the camera looks just about the same underwater as above; foreground tends to be overexposed, rear is dark.

tricky but very useful



A rough rule for determining the relative turbidity and filtering effect of the water has been worked out by Kendall and Schenck. On a bright day they take exposure readings at the surface, and at successive intervals to a depth of 10 or 15 feet. By noting the changes in exposure required at the various depths, they get a good idea of the amount of light filtered out by 4, 8, 10 feet, or more, of water.

Let's say the meter shows that an exposure increase of one full stop is necessary at 10 feet. That means that a flash fired horizontally through the water at a distance of 10 feet (bulb to subject to camera) would require one full stop additional exposure (beyond that indicated by the guide number) to overcome the filtering effect of the water. This is not a foolproof system, for conditions may change between the time of the test and that of the flash, but at least it gives a basis for starting.

With black-and-white films, the only problem is exposure, and their latitude makes it not too difficult to get a decent print. With color, (Continued on page 106)

Flash off the camera is great improvement. Here Ed Fisher prepares to camp 30 feet underwater for 24 hours. Flash was on extension, held just below surface by assistant in boat. Diffused light carried downward, illuminated the scene as if by daylight, yet picture was made at night.

build an underwater housing

Here's an underwater camera housing that you can build for about \$20-or less if you shop around for materials.

Made of 1/4-inch Plexiglas, the housing holds camera, exposure meter, and silica gel dehumidifier for keeping condensation down. Winding key and shutter release are operated from outside the housing. While this housing was made for a Revere roll film movie camera, it can be adapted for use with any camera-movie or still. Construction is simple and can be done on a kitchen table. Power tools serve to cut working time, but ordinary hand tools will do. It's possible to fashion the winding key stem at home (pictures, page 69), but you'll find it a lot easier to trot down to the local machine shop and have it done for a few dollars.

There are no tricks involved in construction. But you will have to add one thing to the materials, tools, and bits of hardware-careful workmanship.

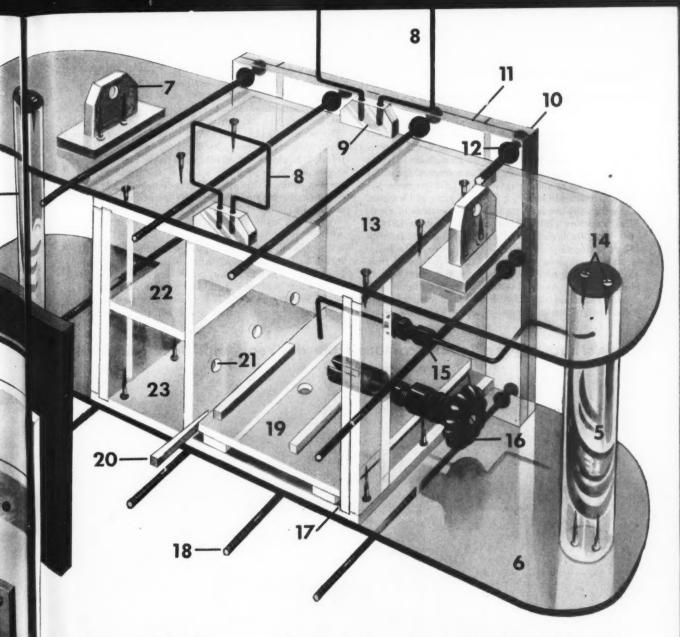
What you need

The first trip should be to the hardware store. Pick up a 1/4-inch hand drill of the eggbeater type, 1/4-inch and $\frac{5}{6}$ -inch drills, and taps for $\frac{3}{6}$ and $\frac{9}{16}$ threads. You will also need a coping saw, fine-tooth saw, pliers with a cutting edge, and clamps or a vise. The hardware or plumbing supply store can also furnish a 1/8-inch welding rod, asbestos graphite packing, a package of Shur-Seal Form-a-Washer or similar product, 1/8-inch brass screws (14), neoprene washer blanks, and the wheel for winding key control (16). A hacksaw may also prove useful.

The ten 6½ x ¼-inch naval bronze bolts (18) and wing nuts (1) can be obtained from a marine supply house. About five pounds of 11/4 x 1/4-inch flat brass (2) can be found at either a junk yard or a machine shop. T. E. Conklin Brass & Copper Co., Inc., 54 Lafavette

drawing by F. G. Schwarz

by Myron Matzkin and Norman Schiff



I. Wing nuts to fit bolts (18) can be purchased from any marine supply

2. Flat brass pieces, 11/4 x 1/4 in. available at junk yards or machine

3. Back plate made of 83/4 x 71/2 in. Plexiglas.

4. Gasket is of pure gum rubber, 7½ x 8¾ in. and ¼ in. thick. 5. Solid Plexiglas rods, 6 x ¾ in. are

6. Wings fashioned from two sections Plexiglas, 17 x 51/4 in. each. 7. Lugs for neckstrap are of scrap

Plexiglas, shape as desired. 8. Frame viewfinder sights, front and rear, are 1/8 in. welding rod.

Check size, shape with camera view-

9. Viewfinder base is scrap Plexi-

10. Plexiglas cut in 11/4 in. wide strips forms rectangle to strengthen

11. Front plate identical with (3). 12. 1/4 in. hole grommets help strengthen box but are not neces-

13. Basic box made of two pieces 51/2 x 51/4 in. Plexiglas, two pieces 73/4 x 51/4 in. Plexiglas.
14. All screws 1/8 in. brass.

15. Shutter control made of 1/8 in. welding rod, 1/8 in. compression joint or gas connector.

16. Winding control wheel can be bought at hardware store. Control key stem is brass (see pictures,

page 69 for details).

17. Rabbet joint assures water-tight seal but isn't essential.

18. Ten 61/2 x 1/4 in. bronze bolts.
19. Camera platform measures slightly less than interior of basic

box (13). 20. Wedges formed from scrap Plexiglas.

21. Holes between dehumidifier compartment and basic box.

22. Exposure meter compartment. 23. Dehumidifier compartment for dessicant such as silica gel in cloth bag or metal container with air holes.

Build your own housing (cont.)

Street, New York City, carries both the brass and bolts. For the basic box (13), you will need two pieces of 51/2 x 51/4-inch Plexiglas, and two pieces of 73/4 x 51/4 stock. For the back (3) and front (4) plates, identical pieces of 83/4 x 71/2-inch Plexiglas. The front plate is strengthened with 271/2 inches of Plexiglas (10), cut in strips to form a rectangle. Compartment for silica gel, light meter, and extra weights (23) requires one 2 x 51/4-inch and one 51/4 x 51/2-inch piece of Plexiglas. The wings (6) are fashioned from two sections of Plexiglas measuring 17 x 51/4 inches each. Handles (5) are two 3/4 x 6-inch solid rod Plexiglas, All Plexiglas, with the exception of the handles, is 1/4-inch stock. The bonding agent, ethylene dichloride, can be purchased from the plastics supply house. Among the firms selling Plexiglas are: Almac Plastics, Inc., 600 Broadway; Berton Plastics, Inc., 585 Avenue of the Americas; and Commercial Plastics & Supply Corp., 630 Broadway, all

of New York City. Also check your local phone book.

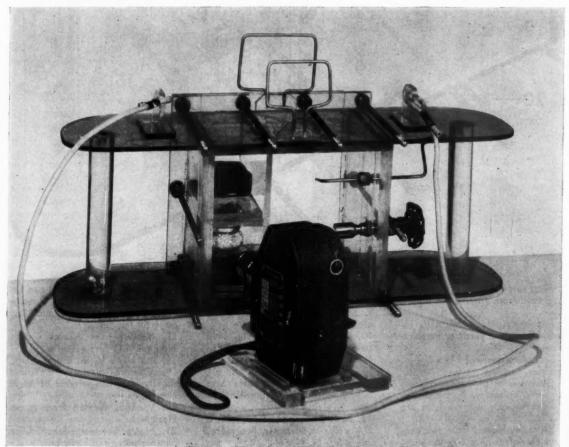
Housing controls are made from one \(^3\)8-inch and \(^1\)8-inch compression joint (15), or gas line connectors as they are sometimes called. Any garage or automobile supply store has them in stock. The winding key stem (16) is made of brass and can be turned out by any machine shop. It fits into the larger of the compression joints. It might be a good idea to show the machine-shop mechanic the stem design and the compression joint, keeping in mind that asbestos graphite packing is to be used to make a watertight seal (see method of assembly, pictures, page 69).

The gasket

The gasket (4) is made of pure gum rubber, $7\frac{1}{2} \times 8\frac{3}{4}$ -inches and $\frac{1}{4}$ -inch thick. Gum rubber has been found best after much trial, error, and water. It can be cut to shape easily and stands up well in salt water. A flat, round base tripod screw is also needed.

If the wings of the underwater housing are ignored

Here's housing for Revere camera from the rear with back removed.



This is the housing from the back. Note runners on camera platform to keep camera facing forward. Silica gel and meter are held in their respective compartments by cellulose tape. When desired, additional ballast weight can be added in the form of brass bars placed in any of the compartments depending upon balance. Neck strap can be made of any sturdy, salt-water-resistant material. When replacing gasket, Plexiglas, make sure wing nuts are tight. for a minute, you can see that fundamentally the basis for the rig is nothing more than a simple box (13). The front (11) and back plates (3) are wider.

Starting the basic box

Start construction by cementing the top and one side of the basic box. A rabbet joint (17) may be used for greater strength and more certain seal, but it isn't absolutely essential—providing care is taken that all surfaces to be joined are square. Apply the ethylene dichloride with an eye dropper or small brush to the surfaces to be joined. Allow a few seconds before joining the surfaces and then put them under pressure in a vise or with clamps. Allow at least 15 minutes before removing. Follow the same procedure with the remaining two sections of the basic box. Now bond the two units together and you have the basic box. Fit in dividers for meter and silica gel dehumidifier and bond them into place, after drilling a few holes (21) in both pieces for air circulation.

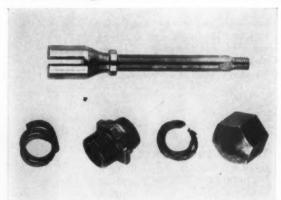
Let's forget the basic box for a minute. Cut the flange, or front plate reinforcement, so as to form a square on the front plate (10). Take the back plate and the front plate, place them back to back, with the front plate reinforcement in position, and clamp them together. The next step is to take the basic box and position it in the center of the back and front plates. Determine the center line around the flange and mark off the bolt hole positions. Remove the box and drill the holes. Make sure they are straight.

After the holes have been drilled, the front plate can be positioned and bonded to the basic box. Reinforcing strips can be bonded before or after the plate is cemented to the basic structure.

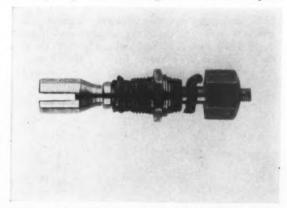
Platform construction

The platform (19) measures slightly less than the inside dimensions of the camera compartment in the basic box. Wedges (20) formed from scrap pieces are used to keep it tightly in place. Scrap (Continued on page 105)

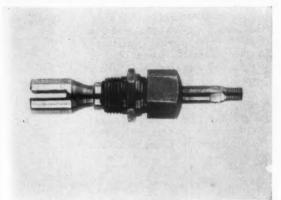
A watertight control can be made easily by following these 4 steps.



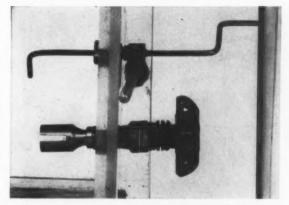
1. Here are the components: winding key stem at top can be machined at machine shop to fit your particular camera. Below, left to right, are asbestos graphite packing gasline connector, Form-a-Washer and other connector half.



2. This is the winding key with everything in place. The packing has been wrapped tightly around the forward section of the stem. The stem has been inserted in the front end of the connector and the washer formed between.



3. To assemble control, force packing into the front end of the connector. Screw back and front ends together with the washer in place as illustrated. Making washer and packing fit into connector takes some manipulating.



4. Here's the winding control assembled and placed in the housing. The shutter control, seen above it, is made watertight in the same manner. The exact dimensions of the winding key, shutter control depend on camera used.

make the sun work for you!

Nine ways to solve your bright sun picture problems

WANT SKIN MODELING? POSE HER CORRECTLY. Next time you're out in bright sun try this method of finding the right light-shadow combination. Have the model turn very slowly in a full circle, keeping her eyes shut to protect them from glare. Study each angle carefully. Watch where the shadows fall. Then pick the lighting combination which best sets off the model's skin, face and figure. Don't be afraid to use lots of shadows in the right places. Most of the time you won't want them around the eyes or on the face itself. But you can use them freely as Andre de Dienes did, right, to stress the shape of neck and shoulders. And in these areas, small pockets of light and shadow give the skin a feeling of life and add glamour. Have the model keep her eyes shut till just before you shoot. This helps prevent squint. For variety try some pictures with the model's eyes half open. De Dienes used a Graflex D camera, Kodak Plus-X film, and medium yellow filter. The camera settings were 1/110 second and f/11.



TRY STRONG CONTRAST to make a different and visually exciting picture this summer. The idea is to take advantage of harsh contrasty light-set black against white and create a pattern photograph. How is this done? In the picture, left, of a Florida housing project, Victor De Palma used two techniques. To emphasize contrast and block up highlight detail he overdeveloped his film. Then in printing De Palma further increased picture contrast by using a hard paper (No. 5). Both steps strengthened the pattern effect by eliminating the middle gray tones, and showing white areas almost without detail. The exposure: 1/100 second and f/11, with a Rolleiflex camera and Kodak Super-XX.

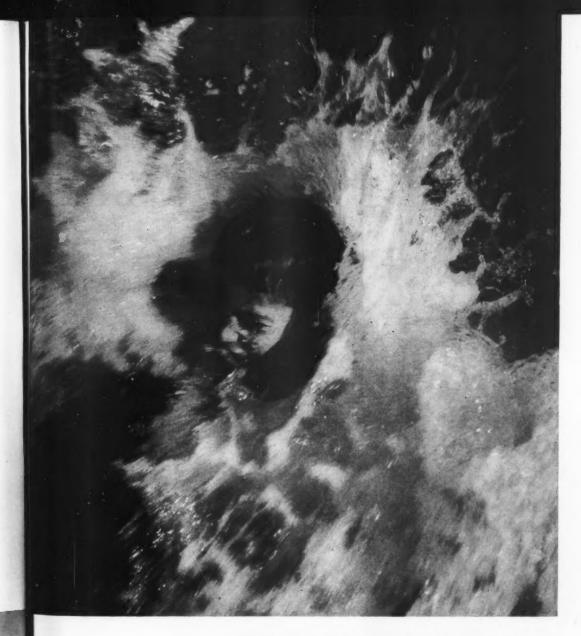




TRY A SEMI-HIGH KEY EFFECT and emphasize the washed-out, sun-baked quality of a beach scene. The idea is to stress all the light-toned areas, but include a few well-placed darker ones for picture accent, as in Burt Owen's shot, above. Then shoot for full exposure in dark areas where you want detail (above, the child), slight overexposure in light areas like sand. This makes it easy to further reduce detail in light areas when enlarging. Here Owen printed for the child and reeds only. Little detail shows in the sand because these portions of the negative were denser and allowed less light to pass. Exposure: 1/100 sec., at f/16, Rolleiflex camera, Kodak Plus-X film

WANT TEXTURE? USE SIDELIGHT for realistic skin detail and strong facial modeling. It's best for pictures of men as in Fritz Henle's photograph of a young Hawaiian canoeman, right. But you can use it for girls and children too, when you want to show particles of sand, or drops of water on bodies. In either case, nearby sand or water usually reflects enough light onto your subject to record some shadow detail. And a yellow filter on your camera cuts down skin reflections, produces better skin tones in bright sun shots. Henle used a light yellow filter, Rolleiflex camera. Exposure was 1/50 sec. at f/11, with Ansco Supreme film.





BRIGHT SUN IS FINE FOR ACTION because you can shoot as fast as your camera's shutter permits. There's plenty of light to stop action completely—or partially if you prefer, as in Fritz Henle's picture of a boy in the breakers, above. The choice is up to you, and depends on which technique you think will convey the mood of the situation most effectively. Henle could have used a faster shutter speed than he did (1/250 second at f/11, with a Rolleiflex camera and Kodak Super-XX film). But the resulting blur in the breakers gives a feeling of motion to the water as it swirls around the child. Then, too, at small apertures you have a deep zone of sharpness, and can concentrate on shooting without refocusing every time the subject decides to move forward or backward in the scene.

FOR MOOD, ACCENT SHADOWS. Nine times out of ten you won't want deep shadow on your subject's face. But in the tenth case (see Fritz Henle's shot, right, of a boy calling) use of dark areas can transform the scene into an unusual photograph. Black eye sockets, dark mouth area, deep shadow under the nose—all these are usually objectionable in bright sun pictures of people. But in Henle's shot they point up the feeling of excitement in a boy's play. Exposure was 1/50 at f/11, with a Rolleiflex, + 1 Proxar closeup lens, Ansco Supreme.





HAVE HER WEAR SUNGLASSES if she's facing into the sun and you don't want to record a squint. Yes, the eyes with their expression will be hidden. But you can make the pose tell the story as in Stan Wayman's picture, left. Here he gets a fresh, impish quality from the slightly stylized arrangement of arms and legs. The fact that the eyes are covered is unimportant. So next time you photograph a girl with sunglasses concentrate on the pose. Exposure: 1/500 sec. at f/5.6, with a Rolleiflex camera, Kodak Super-XX film, and medium yellow filter.

HIDE THAT BRIGHT SUN behind a convenient prop if you have to point your lens towards the light. Whether you use an umbrella, a large sun hat on your subject's head, or even a nearby figure, be sure to move so that the sun is completely blocked off. Then take your exposure for shadow areas in which you want detail. When objects are translucent like the umbrella in Harold Feinstein's picture, right, you'll get excellent detail in shaded areas. If you can make the prop an essential part of the picture's design as Feinstein did your shot will have more impact. Here the umbrella also breaks up a large white area in the picture and adds to overall design. Canon, Kodak Super-XX film, 1/200 at f/16. ▷

FLAT SCENE? ADD DEPTH. Ever notice how bright sun washes out depth and contrast in seascape pictures? Try including a foreground object to put the depth you saw back into the picture. It may be a beach umbrella, a figure, or a rock. Whatever you use be sure it's a natural part of the scene. In Fritz Henle's picture, right, a palm frond which had fallen on the sand adds a three-dimensional quality to the scene and provides a few dark tones which are needed for picture contrast. Try covering up the palm frond with your hand and you'll see how flat the photograph would have looked without it. The time: late afternoon, on a Bahama key. Henle used a Rolleiflex with light yellow filter. Exposure was made at 1/50 second at f/16, with Ansco Supreme.

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Sombed home, Greece, Exposure, without meter, approximately f/5.6 and 1/100.

STEVEN TREFONIDES

Week-end photographer "designs" with a camera

In "discovering" Steven Trefonides this month, we have found a photographer whose sense of design is impressive. Design can be used in various ways. It can constitute picture content-simply and obviously-and be enjoyed for its own sake. Or, design may be secondary to content (although essential in heightening it).

In the cat picture, above, the design or pattern is obvious. It would be overwhelming, in fact, if it weren't saved by the mouser crouching in the black slot made by a slightly raised sliding door. The combination of cat and pattern produces a surprising picture.

In contrast, the Greek scene at the left has no casual content. In the foreground, the blurred frame of a useless bedstead suggests prison bars. Prison makes you think of punishment. In being forced to live in the rubble of a bombed-out home, in being unreasonably wounded, this boy has been unjustly "punished."

Design also may be used to keep a picture flat by accenting two dimensions. On the other hand, it may be used to simulate depth. In the picture at left depth is accomplished by the focus, and by the perspective through the bars of the foreground bed posts into one room, then another. The boy is in sharp focus; his mother is slightly blurry in the further room. This approximates what your eye would have registered had it been in the camera's position and focused on the boy. It's as if you were really there.

Design-consciousness is no news to Trefonides, a paintter, from Boston, Mass. He has worked with it for ten years. Teaching and painting continue to be his livelihood, but he has said that photography has assumed an equally important position in his creative work .- D. J.

Medium-price bracket gets

AUTOMATIC TWIN-LENS 21x21 REFLEX

WHAT MAKES the Minolta Autocord different from other twin-lens reflexes? It isn't the four-element, f/3.5 Rokkor taking lens, the automatic loading, or combined shutter cocking and film wind by crank lever? Other cameras have had similar features. Self-timers, MX synchronization, focusing with either hand, infrared footage markings, speeds from 1 sec. to 1/400 sec. aren't novel either. But having all these features incorporated into a camera selling for \$99.50 is novel—maybe it's unique.

If the camera proved well built, the lens and shutter accurate, the Minolta Autocord should indeed be a formidable machine. So Modern obtained a sample production model and put it through the wringer. It wrung well. A number of the staff members gazed covetously at it. Here's why:

The Autocord doesn't look like a totally unfamiliar camera. The design follows a well-worn Germanic path. The camera feels, and is, solidly built. Many of the larger units are heavy alloy castings.

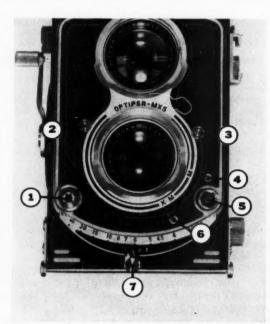
The Minolta may perhaps be the easiest twin-lens reflex to open for loading. You pull a small button on the left side of the camera and the back opens instantly. The Minolta hinges at the bottom and opens at the top. Consequently, you don't have to turn it upside down to open it as you do with most twin-lens cameras.

To load, you place the film in the top film chamber and fasten the end of the No. 120 film to the empty spool in the bottom chamber. The Minolta designers wanted the film to reach the film plane without turning a corner on rollers the way it does if it loads from the bottom to the top. They felt that their design might prevent film from "taking a set" or buckling on the corner before the picture was taken. (Frankly, we've never had such a difficulty with any twin-lens reflex.)

Once you've attached the paper leader, you turn the film crank until an arrow on the paper leader back matches two red dots on either side of the camera's film plane. You then shut the camera back and wind the crank handle until it stops. You are now at the first exposure and the number "1" appears in a small window next to the crank handle. You set the shutter speeds and lens openings by moving two small knobs (2 and 3 in the photograph). The setting numbers appear in two peep windows atop the viewing lens. The black and red figures, appearing against a light background, are easy to read, even when the camera is (Continued on page 112)



Minolta Autocord, made by one of the oldest and largest Japanese camera manufacturers, is being distributed by the FR Corporation and carries guarantees from both companies. It has many useful features for a moderate price.



Controls on the Autocord are easy to reach: 1. Shutter release. 2. Shutter speed lever. 3. Diaphragm opening lever. 4. Lever to set self-timer. 5. Push-on and threaded sync. contact. 6. M and X sync. setting lever. 7. Focusing lever.

shot in the arm from 2 Japanese cameras. MODERN tests them

RAPID WIND RANGEFINDER 35mm CAMERA

WE SHOWED THE MINOLTA A to a professional magazine photographer who has a penchant for constantly selling his expensive photographic equipment and winding up with an important job to do and no camera. We explained that the Minolta has a four-element f/3.5 lens, coupled single-window rangefinder-viewfinder, automatic film advance and shutter cocking by a rapid-wind lever, speeds from 1/2 sec. to 1/200 sec., and sells for \$49.95.

He examined it carefully, held it to his eye to check rangefinder brilliance, and wound and released the shut-

ter a few times.

"Well," said he, "let me know how this camera tests out. If it's good, I'd better get one. It's got enough features for me to do just about any professional job, but it's too inexpensive to make it worth selling. At least I'll have one camera ready at all times."

We did not give this photographer the Minolta A to test (we might not get it back). Instead, it was used by a number of MODERN staff members and then sent to Philadelphia professional photographer Bernie Cleff who also tested the Minolta Autocord (opposite page). But, let's look at the camera first before we give any opinions.

No one would mistake the Minolta for another camera. It has distinctive design, if not the type that might win an award at the New York Museum of Modern Art. However, everything about the design is functional. There doesn't seem to be one piece of extra brushed chrome or fancy knob. Everything that is needed is simply there. And each control falls directly under the proper fingers when the camera is held at eye level. The thumb hits the rear of the rapid-wind lever, a forefinger rests lightly on the shutter release atop the comera, and your left-hand thumb rides on the milled focusing lever attached to the focusing mount of the lens. If you must find fault with body design, it does appear a bit too thick, and eyelets at the side for a neckstrap would be welcome.

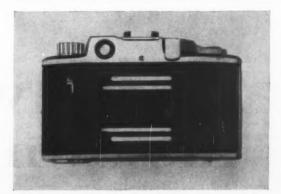
The placement of the shutter-speed dial is rather odd, but convenient. A small wheel is set vertically into the top of the camera (middle picture). White figures on the black surface control the speeds of the behind-thelens shutter from 1/2 sec. through 1/5, 1/10, 1/25, 1/50, 1/100, and 1/200 sec. The diaphragm control ring, set on the front part of the lens mount, has click stops from f/3.5 to f/22. There's a flip lever for M or X sync. at the side of the (Continued on page 112)



The Minolta A 35mm camera, made by Chiyoda Kogaku Seiko K. K., is very distinctive in styling and sturdy in construction, has four-element coated f/3.5 Rokkor lens with click stops in a smooth-working focusing mount.



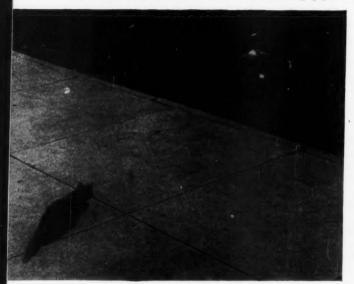
Shutter speed, lens opening, and camera-to-subject distance are all visible from the top of the camera. The black shutter-speed dial is a vertical wheel set into the camera top. This wheel turns easily, perhaps too easily.



The entire back comes off the Minolta A for loading. The interior is a metal alloy easting, assuring a constant film plane to lens mount relationship. Note large view-finder window. It's easier to use than a small one.

The story of Lou Bernstein—
... amateur photographer
... camera salesman
... teacher and student

Dramatic subjects are in your own neighborhood. Diagonal curb line adds motion to shot of cat stalking pigeon.





the world is in his own backyard

by Daniel Dixon



Good composition leads eye to tail of dog, left, in humorous study of bored man walking pets.

EVEN AMONG PHOTOGRAPHERS, a group noted for its quaint lack of conformity, Lou Bernstein rates as something of a rare specimen.

This quality, it should be hastily added, has nothing to do with his conduct. It has, however, a good deal to do with his reputation as a photographer. Outside of the city in which he lives, for instance, only a sprinkling of people know anything at all about this jaunty, brighteyed native of New York. But on his own stamping grounds, in what is conceded to be the capital of the photographic world, Bernstein is a very prominent citizen, indeed. His next to numberless friends begin with some of the most celebrated names in the business, and includes the hundreds of amateurs to whom he is constantly passing out advice and instruction. He's a tireless

booster of teenage photographers; neighboring camera clubs pester him to lecture; his own photographs are frequently published and exhibited. He even acts as a sort of one-man employment agency for job-hunters who, aware that he is often among the first to learn in which darkrooms an extra hand is needed, come to him for a lead. Locally, at least, he's a very active and even an influential figure. Yet (and it's here that the surprises really begin) Bernstein has never been a professional photographer!

Even more astonishing, he doesn't want to be! Though the quality of his work is a long way from clumsy, and though he might very well be able to make a snug living with his camera, Bernstein has chosen to solve this always perplexing problem in another way—as a crack salesman



Even a back porch may be the setting for a picture of unusual beauty and grace. It's in the eye of the beholder.

The familiar becomes important in Bernstein's camera.

in one of the country's biggest camera stores. "Oh, I've thought about going pro, all right," he admits in his rich New York accent, "but uh-uh—it's not for me. There's my family, for one thing. Working on assignments, I'd have to spend a lot of time away from the wife and kids. Besides that, I wouldn't get much chance to do the sort of work I really like. No, I'd rather stay where I am—behind the counter at Peerless. It pays me a good living, keeps me in touch with what's going on—gives me an opportunity to photograph, too. For what I want, there could hardly be a better spot."

Bernstein's unusual approach had its beginnings a long way back—back on the lower East Side of Manhattan where, in 1911, he was born. It was a tough place to grow up. But, for a kid who was later to become a photographer, the crowded streets and the clamor and the

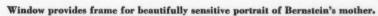
excitement were not without their advantages. Bernstein's boyhood in what he frankly calls "A ghetto" helped to sharpen not only his wits but his eyes. What's more, it was there that he learned how much of life swarms just down the block, just across the lightwell, just beyond the doorstep. For cramped, dirty, and ungenerous though it was, the world in which he was brought up did more than anything else to develop the sense of neighborhood that is so important in his work today.

Bernstein's introduction to a camera, however, was still many years off—and, in the meantime, he was taken up with other interests. Music, not photography, was his first passion. Having been given a harmonica at the age of seven, he toodled it so purposefully that, by the time he was seventeen, he was good enough to be playing in nightclubs and on radio stations.

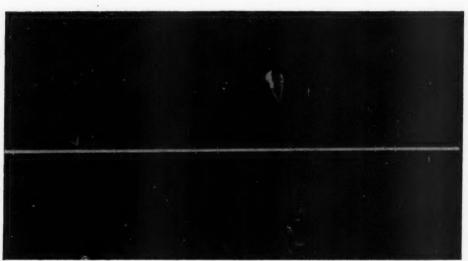
"A couple of years of that, though," Bernstein reflects, "were enough for me. I had a lot of fun, but the hamburgers and the hotels got me down. So I quit, went back to New York, and began to study architecture. I got married, too, along about then. When I found out



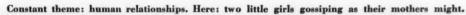
The topsy-turvy mood of childhood is found in this well-composed playground scene.







Early architectural training shows in disciplined sense of design found in Bernstein's pictures.





Bernstein's work is marked by discipline, design.

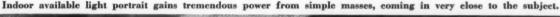
that I had to earn more money than I was making as a draftsman, I went to work in the shipyards. All this time, at benefits and things like that, I was still playing my harmonica. But I never really grabbed hold of what I wanted to do until 1935, when my first child was born."

The event was momentous for more reasons than one. With the baby came Bernstein's first camera, given to him by a generous friend. And from the moment he picked it up, Bernstein knew that his restless dissatisfactions were at an end. All the same, there were difficulties. "I didn't know what I wanted to photograph," he recalls ruefully, "let alone how. On top of that, there wasn't anyone around who could give me a hand. At the start, anyway, I had to get along by myself."

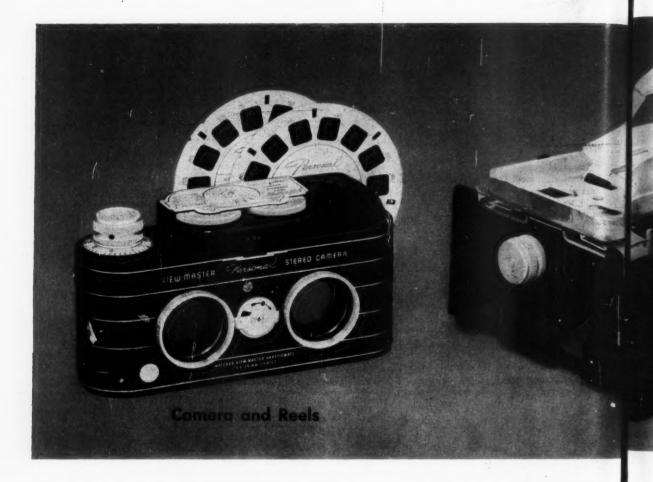
While he was learning the fundamentals of his craft,

Bernstein took a great many snapshots of the most ordinary kind-his kids, picnics, family gatherings. Then, when he was better able to keep things in focus, he joined the Brooklyn (later the Village) Camera Club, "It was a good experience," he says. "I learned a lot." But among the things he learned was that, in opposition to most of his fellow members, he wanted to devote himself neither to a single-minded study of technique nor to the whimsical picturing of pussy-cats, babies, bridges, or old men with whiskers. After about five years of it, he broke away and wangled himself an interview with Sid Grossman, of whose theories he had heard and who he thought might be willing to offer badly-needed counsel. He was not disappointed. Grossman looked over a portfolio of pictures, pronounced them interesting, and wound up by asking his visitor to become a member of his famous class for photographers-"One of the biggest breaks," Bernstein says vehemently, "that I ever got in my life."

Bernstein's sessions with Grossman were helpful to him chiefly in two ways. One (Continued on page 108)







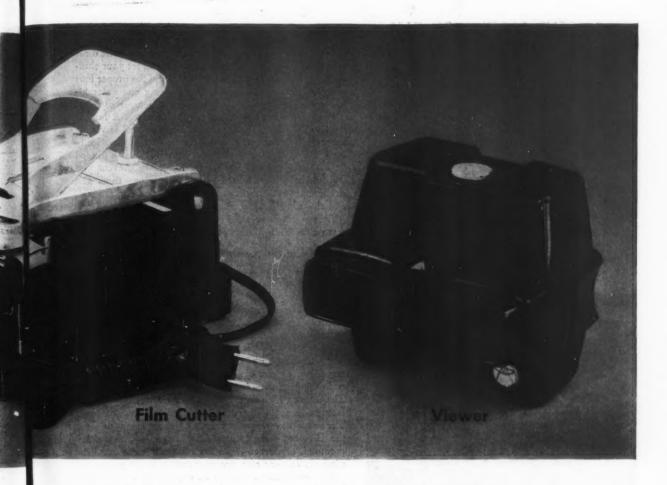
How practical is the

Here's a really unique system of 3-D photography. MODERN examines every item, makes a frank report on how each works.
..... by Norman Rothschild

THE word "unique" is often erroneously applied to about every new piece of photographic equipment made. But this word precisely describes the Sawyer's View-Master Personal Stereo system. The camera is unique, the method of mounting the stereo pairs is unique, and almost every piece of equipment for the system is unique.

The Personal Stereo system is not new. Actually, both camera and film cutter have been available for a number of years. But it's only recently that a sufficiently good stereo hand viewer has been available, equal in quality with the rest of the system. Previously, the only viewer available was a \$2 instrument, more in the nature of an educational toy. Consequently, Modern had held up any opinions on the system pending the arrival of the long-promised viewer. Now the system is intact.

The View-Master Stereo system started out with only a viewer for which commercially made travelogue, cartoon and story-telling 3-D reels were available. Each



View-Master?

cardboard circular reel held 7 pairs of stereo shots, actually made with a 2½ x 2½-in., or larger, stereo camera, which were reduced in processing to approximately 12 x 14mm for insertion in the Sawyer's stereo reels. Sawyer's decided to design a camera for amateurs to make stereo pairs in this size. And that's how the unique camera (\$89.50) came to be designed.

Although each View-Master stereo picture measures 12 x 14mm, the camera is designed to use regular 35mm film cartridges. With a standard 20-exposure roll of film (not a "stereo roll"), stereo pairs are first made along the bottom half of the film as the film is wound from the cartridge onto the takeup spool. Then a knob on the front of the camera is turned, and the lenses, which are set behind the shutters in small, vertical elevators, rise to transmit images along the top half of the film as it is rewound into the original cartridges (see picture, page 104). You can make 37 stereo pairs on a standard 20-

exposure roll and 69 stereo pairs from a 36-exposure roll.

The lenses are fixed-focus 25mm f/3.5 with stops to f/16. At f/3.5, the depth of field, or zone of sharp focus, extends from 6 feet to infinity. At f/16, the depth extends from 4½ feet to infinity. The lenses are located behind the shutters, which are of a guillotine type with speeds of 1/10, 1/15, 1/25, 1/50, 1/100 sec. and bulb. The shutters are protected in front by plain, optical glass. The front of each shutter mount is threaded to accept Series V accessories. Retaining rings are supplied.

Besides the unusual device of using vertically sliding lenses and producing such small pictures, the Sawyer's instrument has another interesting feature, the exposure computer dials atop the camera. The two dials control shutter speed and diaphragm openings. Both are interconnected with a dial in the middle which indicates the ASA Speed Index of the film used, the time of the year, the lighting conditions, and the type of subject, dark,

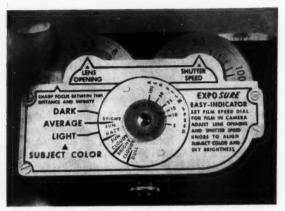
PERSONAL'S CALCULATOR DIALS ELIMINATE EXPOSURE METER NEED.



1. To set the exposure calculator, you must first place either the summer or winter indicator next to the speed rating of the film with which camera is loaded. In case you forget how to use calculator, instructions are printed atop it.



2. Next, you set the shutter speed you wish to use on the right-hand dial. Although markings here indicate only 1/50 sec. and 1/100 sec., in-between speeds can be estimated and set with the unmarked lines between the numbers.



3. Now you rotate the left-hand dial, watching the indicator of the interconnected middle dial until the subject color (here "average") lines up with the light conditions (bright sun). The proper aperture now set is f/6.3.

average or light. By properly positioning the center dial atop the camera, you automatically set the correct lens opening and shutter combinations. And the exposure dials are constructed in such a way that you can set your shutter speed first and then automatically find the proper lens opening, or you can set the lens opening and automatically find the proper shutter speed (pictures at left).

Here are other important camera features. A bubble level to help keep the camera at an even keel is visible through the viewfinder. Winding the film automatically cocks the shutters. The all-metal alloy body has a hinged back. There are various safety devices to prevent you from opening the camera back at the wrong time. The shutters are synchronized for all flashbulbs at 1/25 sec., and electronic flash at all speeds.

Before we discuss the camera more, let's look at the rest of the View-Master system.

Processing and mounting

Once you've shot the last of the 37 or 69 stereo exposures, you must get the film processed. Since the Personal stereo pictures are far smaller than standard 2-D or stereo transparencies, processing labs do not have the facilities for mounting them. Instead, you must specify that the lab return the film to you, without mounting, in one uncut strip. Then you can send the strip to Sawyer's. who will mount a 37 pair roll for \$2.25 or a 69 pair roll for \$3.45, or you easily can mount the stereo pairs in reels yourself with the Sawyer's Film Cutter (\$14.75). The cutter, which illuminates each pair of transparencies from underneath, die-cuts each stereo pair from the strip. The small transparencies are then slid into empty slots in the Personal reels (see pictures, page 89). And when mounted, the stereo shots are not only ready for hand viewing, but are also properly mounted for projection.

The completed reels can be enjoyed in two different hand viewers, projected in stereo with the Stereomatic 500 3-D projector, or projected as single frames with either of two non-stereo projectors.

The two viewers

The cheaper of the two hand viewers is the \$2 item originally designed to view the commercially-made View-Master reels. It's of an all-plastic construction, with no built-in light source. There are no focusing or interocular adjustments. And the image is quite small—you feel as if you are looking at a scene through a long length of pipe. A separate, easily-fitted battery-powered light source is available for \$2 additional.

The Deluxe Viewer (picture, page 87) has focusing lenses, a battery-powered light source, but no interpupillary adjustment. However, the lenses are relatively large in diameter and none of 20 people to whom the viewer was shown had any trouble fusing the images. The picture as seen in this viewer is considerably larger and sharper than that seen in the inexpensive viewer.

The camera cutter and viewers are the basic units in the Personal System of stereo. How good are they, and how do they compare in quality with the "standard" stereo of 23 x 24mm each frame?

The smaller frame size of the Sawyer's system does allow you to produce stereo pairs far more cheaply than any other system. In fact, the prospect of shooting 69 complete stereo pairs before you can take the film from your camera is almost frightening. (Sawyer's recommends the 20-exposure roll). The small size of the picture needs a lens of extremely short focal length (25mm). Focusing is really unnecessary. In all pictures made at maximum opening, sharpness was easily maintained from 6 feet to infinity. The shutter release presses easily, although the shutter itself is slightly noisy. Lack of speeds over 1/100 sec. may limit the camera's use for action stereo.

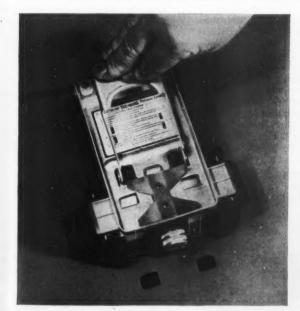
Unlike any other stereo camera, the Personal doesn't need to have film rewound into its original cartridge after you've shot the last stereo picture. The film rewinds into the cartridge as you're exposing the upper half of the film. When you've finished the last picture, you can give the wind knob a twist more and your film is ready to be removed from the camera.

The Automatic 500 3-D projector (\$119.50) is probably the simplest of all stereo projectors to operate. It has a 500-watt lamp, two matched 2½ or 3 in. f/3 lenses and focuses by a milled wheel. Naturally, a special aluminized screen and polarizing glasses are needed for viewing. To focus the projector, you simply insert an empty Personal reel, turn on the projector lamp, and line up the two projected squares of light so that their sides are vertical. You're then ready for projection. No horizontal adjustment is needed, and the lever for optical adjustments need only be used if the stereo pairs are mounted incorrectly. Focusing need not be changed during a stereo show unless you switch from home-made stereos to the commercially made (Continued on page 103)



The Stereomatic 500 3-D projector needs a minimum of fussing and care. The seven pairs of stereo shots can be shown on an aluminized screen and viewed through special polarizing glasses without any need for refocusing. Purchaser can have either 2½ or 3 in. projection lenses.

YOU CAN HAVE REELS MOUNTED, BUT DOING THEM IS EASY.



The Film Cutter positions and die cuts the tiny stereo frames from the uncut 35mm film strip. Illumination under the pairs to be cut allows the user to edit his reels in any order he wishes. Cut stereos slip out of the cutter.



Inserter shown (35c extra) grasps individual stereo frame like tweezer, makes mounting in Personal reels an easy proposition, even for the unskilled. Mounting an entire reel of Personal stereos takes only about 5 min.



The IIIc family &

—and prints that save you time in summer by drying faster... stretching focus from here to infinity with the new ultra-fast films...the Case of the Frustrated Quality Control Engineer...a slide projector that switches slides so fast you can't see them change... and big paper transparencies on Kodak Translite Paper

IIIc addenda

You probably saw this ad on the back cover of this magazine last month. The picture shows many of the elements that



go with the Kodak Retina IIIc Camera to make the IIIc system. Only we didn't give the names of everything and people have begun to ask us. So here's a brief summary of what's in the picture, starting from the top.

First there's the Kodak Table-Top Camera Stand Kit, Model B, for closerange and table-top work, \$34,50. Then there's the Kodak Standard Flasholder with bracket and flash post adapter to fit the Retina IIIc, \$9.95. For those interested in photomicrography, there's the Kodak Retina Microscope Adapter Kit, Model B, \$59.50. For ultra closeups, the Kodak Retina Close-Up Kit, Model B, \$43.50. The Kodak Retina 80mm Auxiliary Lens reduces the nearfocusing distance of the Longar Lens Component from 61/2 feet to 31/2 feet, \$16.50. Then there's the Kodak Retina 50-80 Sports Finder, \$8.75 including leather case. The Kodak Retina Close Range and View Finder Kit, Model B, permits hand-held rangefinder-focused picture taking from 3 feet down to less than 1 foot, includes parallax-correcting viewfinder, two auxiliary lenses and case,

\$36.50. And the Kodak Retina 35-80 Ontical Finder which shows the field covered by the 35mm and 80mm lenses, \$17.50 including case. The plush-lined leather Kodak Retina Field Case, Model B. is \$13.50. The Kodak Retina Curtar Lens Component gives you a 35mm wide-angle f/5.6 lens, coated and fully color corrected, \$62.50. The Kodak Retina Longar Lens Component, 80mm telephoto f/4 is \$82.50. And, of course, the Kodak Retina IIIc Camera itself with f/2 lens, 1/500 shutter, built-in exposure meter, linked shutter and diaphragm, thumb-lever film advance, and just about everything else you could think of, \$185. Your Kodak dealer can fill you in with the details. You ought to know about them. And about the \$135 Kodak Retina IIc which uses the same auxiliary items.

Q. C. E.

Back in the shop where we make our miniature cameras there's a group of men who go around with fire in their eyes and suspicion in their souls. Their job is to see that every camera that comes off the line is as good as we know how to make it. Or better.

They're called Quality Control Engineers. Follow one around for a while and you'll think he's working for you, not for us. As a matter of fact, he is.

Usually, one of these men is assigned to a single product, like the Kodak Signet 35 Camera. His rounds take him

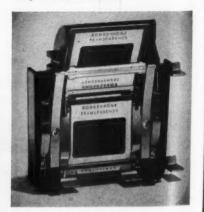


from the laboratories where the raw materials are tested, up and down the assembly lines, and to the quality control testing laboratories where the final product is given the works. If he sees something he doesn't like, he does something about it. His work starts long before a camera is ready for market, continues indefinitely.

The Quality Control Engineer assigned to the Signet 35 has the most frustrating job of all. He has been picking it apart ever since it came off the drawing board, but it's hard to find anything wrong. For this camera was correct from the word go.

Sure, there have been some minor changes. We changed the style of the focusing lever so it harmonizes with the shutter-release bar. We changed the color contrast in the rangefinder slightly. But that's about all. Except for the price. That we changed to \$75. And that makes the Kodak Signet 35 the biggest bargain in miniature cameras today. It has the finest miniature-camera lens we make, a Kodak Ektar f/3.5, Lumenized; a ball-bearing lens mount; a precision rangefinder, and a host of other features your Kodak dealer would be only too glad to show you. See him soon.

Snap-action slide feed



This ingenious little mechanism is the snap-action slide feed from a Kodaslide Signet Projector. Don't try to figure it out (our photographer got so confused he pictured it upside down). The important thing is that when you push a slide in, this little unit drops the previous

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If you Retine built became

And

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the 13th floor

slide down and centers the new one in position so rapidly your eye can hardly follow the change. The new picture simply arrives before you are aware anything is changing. This is something to see; go down to your Kodak dealer's and see it. You are likely to walk out with a Kodaslide Signet 500 (\$72.50 and \$79.50) or a Signet 300 (\$59.50). Which is just what you should do, if you want to see your 2 x 2 color slides projected at their best.

How big will stereo?

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We sat in on a hot discussion recently. About stereo cameras. One man was betting that, by 1958, there will be a third of a million stereo cameras in active use. Another was betting on a million in the United States alone.

Privately, we think it's anybody's guess. But we can safely voice one opinion: if stereo *does* grow to the million level by 1958, the new Kodak Stereo Camera will have a lot to do with it.

Why? Because this Kodak Stereo Camera is just what's needed to blow away the fog of theory and make stereo



a pleasure. It takes the emphasis off esoteric talk and technical maneuvers, and puts the stress right where it belongs—on good pictures. It's fast in operation, it's a delight to handle, it prevents errors, it gets the picture while people with other stereo cameras are still trying to measure how far it is to the subject. And it's priced at \$84.50.

If you're lucky enough to own a Kodak Retina IIIc Camera you have a self-timer built in. If not, don't be too unhappy, because a Kodak Auto-Release will do the same for any camera with a cable release socket. Costs \$3.86.

From here to infinity

In pursuit of the fast "f" number, you may have overlooked the other end of the scale. Close down to the smallest opening your camera has, and you get those vistas with grass at 3 feet and pine forests at miles, all sharp as a tack.



"Crescendo perspective" we've heard it called,

It used to be that such scenics called for tripods and such. No more. Load up with Kodak Royal Pan or Tri-X Film (daylight rating of 200), stop your camera all the way down. You can still shoot at speeds fast enough to eliminate handheld motion sickness, you get every inch of field depth your camera can give you, on a negative you can blow up and up.

Starting point—a package of Kodak Royal Pan Film or roll of Tri-X Film at your Kodak dealer's.

No broomsticks

We note, as a matter of interest, that Kodak's nineteen-story headquarters building at Rochester has a thirteenth floor. This is fairly unusual in tall buildings, where the floor numbers usually step blithely from 12 to 14. It proves that Kodak is not superstitious. As a matter of fact, we said good-bye to magic and superstition many years ago, when the Kodak Research Laboratories were established.

We agree that films as fast as Kodak Tri-X and the new-type Ektachrome Films seem like witchcraft; that lenses as sharp as the Kodak Ektar Lenses smack of wizardry; and that the superb



quality of such papers as Kodak Medalist and Opal may suggest we have a few senior-grade thaumaturgists in our midst. Not so. The lenses are pure mathematics (generated with the aid of some extremely fancy electronic computing equipment). The films and papers represent a high order of physics and chemistry. Our laboratory people wear white lab jackets, not alchemists' robes; and they ride on slide rules, not broomsticks. We think science is better than Merlin.

(By the way, the Research Laboratories are not in our nineteen-story building. They're too big, and are away out at Kodak Park, where the films and papers are made.)

Quick and timely

▶ Do your enlargements take too long to dry? That's because regular paper soaks up a lot of water. But Kodak Resisto Rapid N Paper (with its special water-resistant base) gives you a dry print in 7 or 8 minutes. Speed and other characteristics are the same as Kodabromide; the price is only a little higher. Finished prints are tougher, too; will stand more wear and handling than other prints. Try some.

New free folder about big translucent paper prints for rear illumination, commercial display, etc.—black-andwhite, toned, or hand-tinted. Title: Translucent Photographs with Kodak Translite Enlarging Paper and Kodak Translite Film. Ask our Sales Service Division.



EASTMAN KODAK COMPANY, Rochester 4, N. Y.

Revere 38

16 MM MAGAZINE TURRET CAMERA

Sensational angled turret accepts all lenses from extreme wide angle to 6 X telephoto.

Positive objective view-finders.

With WOLLENSAK 1" f/2.5 Normal Cine Raptar Wocoted Lens in Fixed Focus, tax included, **\$169.50**

See it today at your nearest Revere dealer.

IN PURSUIT OF HAPPINESS REVERE ADDS TO YOUR PLEASURE

you

Dr. Cinema says...

Don't limit your shooting to 16 frames per second when multi-speed cameras will give unusual effects!

For the beginner, and for many whose movie-making ambitions never will exceed the simplest kind of family-record footage, the single-speed camera is fine. With just the 16-frame speed at your disposal there's that much less to worry about.

But this month I'm after the folks who own multi-speed models but who shoot only at 16 frames anyhow.

What's with you people?

Let's dispose of half-speed—8 frames per sound—first of all. This is widely advertised as the speed to use for comedy effects. It's my experience that a little of such Keystone Comedy stuff goes a long way, friends. Go ahead, by all means, and get a sequence or two showing a frantic traffic pattern or one of the kids running to the store to get a soda. Thereafter, use your 8-frame speed sparingly for such things as clouds which are moving very slowly. Or ships at a distance. Two things are of utmost importance when filming at half-speed. One is to use a tripod-any camera movement will register twice as noticeably at 8 as at 16 frames per second. And close the lens one full stop for exposure compensation. If f/5.6 is the right setting at 16 frames, you'll need f/8 at 8 frames

Before getting into fast speeds, a word or two about single-frame exposure is in order. This really is a camera speed, in a way, and a very useful one. Many inexpensive cameras now incorporate single-frame exposure. You'll find it very useful for animation work, and in time-lapse movies.

"Sound speed"-24 f. p. s.

Now to the faster-than-normal camera speeds, beginning with 24 frames per second. This is coming to be rated almost equally with 16 frames as being "normal," because of the growing use of sound. Twenty-four frames is "sound speed," for various technical reasons we can't get into here. From a strictly visual viewpoint, it must be admitted that a smoother film usually results from shooting and projecting at 24 frames, regardless of sound. This makes sense, because of 24 frames each frame gets fifty per cent shorter exposure. So there's that much more chance that any subject motion will be "stopped" or registered sharply on each frame as it passes the aperture.

Admittedly, you use film faster when you shoot everything at 24 frames but for smooth results and possible addition of a soundtrack in mind, this is your best all-around filming speed. To compensate for exposure, open the lens a half stop wider than for the same subject at 16 frames—say from f/5.6 to f/4.5 or from f/3.5 to f/2.8.

(Please don't anybody quote me as saying you can't get fine footage at 16

frames-vou can!)

What about 32 frames per second? Here you start getting noticeable slowmotion effect, although this is still far from being true slow motion. First, let's open the lens some more, for adequate exposure. At 32 frames you'll need a full stop better than you did at 16 frames. Thus if the correct aperture at 16 frames is f/4.5, you'll open up to f/3.5 at 32 frames. Or from f/5.6 to f/4, or f/8 to f/5.6.

Action slows down at 32 f. p. s.

The 32-frame speed is most useful, perhaps, for filming water in motion. It imparts a more natural quality to scenes which include waves, waterfalls, rapids, and such. It's a good speed for telephoto shots where you have no tripod, too, since it smooths out all motion and thus minimizes any camera movement.

While I've never heard of it being recommended for such, I personally have found 32-speed useful for analytical black-and-white footage of a golf swing. True slow-motion—64 frames—is best for this, but you can do quite a job at 32 frames, and with half the amount of film. The same thing applies to many other sports, such as tennis and swimming. I commend it also to football coaches who want to slow down scrimmage action noticeably and still stay within the film budget.

Some cameras have a 48-frame speed. I've found this to be perhaps the least useful, although many experts employ it for special purposes. It isn't quite true slow-motion, and yet it eats up film nearly as fast. Conceivably you could encounter a situation where you wanted to film at 64 frames and there wasn't enough light for your widest lens aperture. Under such conditions you might do a commendable job at 48 frames, thus getting ample exposure and still slowing the action a great deal. If you're considering the use of 48-speed, figure on

opening the lens one and one-half stops —from f/6.8 to f/4, or from f/3.5 to f/2, for example.

True slow motion-64 f. p. s.

Now to the speed which generally is regarded as being true slow-motion-64 frames per second. This is what you'll use for analyzing rapid action. It slows a golf swing or a tennis stroke down to resemble underwater movement, so vou can observe every tiny motion and easily relate it to the whole action. The obvious drawback to using 64-speed is the terrific amount of film it eats up. In one second, 2/5 foot of 16mm film passes the aperture at 16 frames per second. At 64-speed, 134 feet whiz past in one second. So unless you're filming for pay you probably won't play around with slow-motion often. It does have one pictorial application for the amateur, however, in the field of tabletop work or miniature sets. Tiny boats in a tub or tank of water tend to bob around jerkily, but they can be slowed down to appear fairly real and convincing at 64 frames. Also, if you're filming modelsize train wrecks or the demolition of any miniature buildings to simulate battle or earthquake, you'll want to use slow-motion for maximum realism. You'll find it interesting in filming wildlife, too, particularly birds on the wing and animals running at full

With a camera which operates at just one speed—16 frames per second—you can turn out a really fine film. With a variety of speeds at your command, you can produce many effects not otherwise obtainable. By all means learn to use normal speed—16 frames per second—properly first of all. Then if your camera has other speeds available, put 'em to work for you without delay.—THE END.



you don't need a submarine

to make underwater movies! See pages 52-69 for details.

MOVIE SECTION)

movie assignment: your local airport

"Whether you're making an air trip or just plan an airport visit, take your movie camera along"—Russ Arnold.

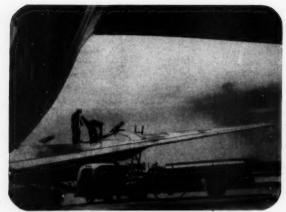
HERE ARE EIGHT IMPORTANT POSSIBILITIES AT THE AIRPORT AND ALOFT.



THE BUS. Many airfields provide bus or limousine service to and from field. Try a pan shot of the vehicle. It needn't even be your bus.



WAITING. There are waiting rooms indoors at most airports, but shots outdoors against the light of waiting passengers produce striking footage.



FUELING. Check with airport officials before attempting to film fueling operations. Find interesting camera angles, frame scenes carefully.



BAGGAGE. Most large commercial airlines load baggage on a continuous belt carrier. You can arrange to shoot your own baggage riding on it.

THE AIRPORT ATTENDANT was about to send the weighed luggage down the chute to the loading dock, when the plane passenger stopped him. The passenger unlocked the suitcase, took out a movie camera, then let the attendant have the closed suitcase.

"I think I'd better carry this along," he said, holding up the movie camera, "Might see something worth

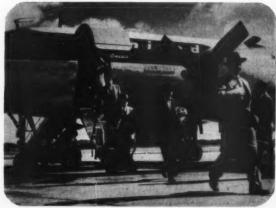
shooting."

And he was right. There are so many movie possibilities if you keep your movie camera loaded and ready when you take a plane trip or visit an airport. Before you visit the airfield, either for an actual flight or just to make movies, it's a good idea to give some thought to the type of movie you're planning. If you are actually making a trip, you'll probably want a documentary film covering the major aspects of the event—entering the bus to the airfield (if there is one), getting the luggage on board, checking with the passenger agent, boarding

the plane, in the air, and so on. It's probably easier to shoot this type of movie using the camera position to represent you; that is, the camera will film what you actually see from your point of view. In this way, you won't need to ask an airport attendant or stewardess to take footage for you because you won't have to appear in your movie. If you're traveling with a friend, it's a different story. He can wield the movie camera for you whenever you want to get into the act.

The first question that may come to your mind is, "What will I be allowed to shoot?" You may shoot all the footage you want at any civil airport, provided you don't get in the way of operations or endanger anybody. If you are doubtful, ask the chief passenger agent. Tell him you'd like to find the best camera positions, but that you don't want to be a nuisance. He'll tell you where you can stand. If possible he'll let you through to a better vantage point nearer the (Continued on page 96)

WHEN PLANNING TO SHOOT FOOTAGE ON FIELD, CHECK WITH OFFICIALS.



DEBARKING. Ask the stewardess to allow you off the plane first. Then film your fellow passengers leaving the plane. Don't pan excessively.



THE PLANE. Include some footage of the entire plane. If you can't shoot your own, you might film a similar plane at other end of the airport.



EMBARKING. If you're actually going to fly, shoot passengers embarking from top of stairs. If you're just visiting find a good ground angle.



ALOFT. Most commercial airlines fly too high for detailed movies of the ground. But get some footage of moving clouds, whirling props.

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AIRPORT MOVIE

(Continued from page 95)

plane. He may even be able to suggest a few angles; remember, he knows exactly where the plane will roll, where it will turn, where it will stop, where the steps will be placed, which way the passengers will be walking.

Once you get his permission, don't move into any area he has told you to stay out of. He's not only trying to keep you out of the way of the ground crew and passengers; he's concerned with your own safety. Remember, also, that there is absolutely no smoking permitted anywhere near the plane, and that it is extremely dangerous during refueling.

If you're scheduled to board a particular plane, tell the passenger agent. In that way, you can stay on the ground until the last moment without fear of it taking off without you. Or if you prefer, the passenger agent may arrange with the stewardess to let you make your scenes from the top of the loading stairs.

The stewardess can help

You may decide to make your top-ofthe-steps footage after arriving at the end of your flight, with the passengers deplaning away from your camera. Speak to the stewardess sometime during the flight, when she is not too busy, and ask her permission.

When shooting from the top of the steps, whether before take-off or after arrival, let the stewardess tell you where you will be out of the way. This will be the best vantage point anyway because you want to be as far to the side as the ramp will permit. And, of course, you will remember not to pan too quickly; your best bet is to pick up one passenger in your viewfinder and let the camera follow him.

When shooting from the ground near the plane, stay out of the direct line of the passenger traffic. If you are moving around unattended, stay toward the tail of the plane. If you can get permission to move forward, you can get beautiful framing shots from under the wing of the plane, shooting up toward the tail. But stay as far as you can from those propellers and from the gasoline truck. Make friends with the passenger agent; a little diplomacy will get you all the help you need.

A little common sense helps, too. If just visiting an airport, do your shooting on a day when the field is not busy. Monday and Tuesday are usually your best days. Don't expect cooperation on a busy Sunday. If you have to shoot on the weekend, you'll find Saturday a much better day than Sunday because of the volume of sight-seers at most airports on Sunday.

If you are shooting other parts of your (Continued on page 98)

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AIRPORT MOVIE

(Continued from page 96)

trip beside the air-travel, you might want to make some tie-in footage. One example might be a shot of the luggageloaded airport limousine moving slowly across the frame, close up, finally disclosing a highway sign pointing to the city, giving its name and distance.

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AUGUST.

Aloft, however, you'll have some new problems. On your first flight you may be tempted to shoot a lot of film aboard the plane. You'll soon find, however, that your skybound possibilities are limited. The interior of the average commercial plane is entirely too dark for color film. If there is enough light for you, avoid the extreme contrast of one-sided window light. Try to do your shooting where there is fill-in light from the windows.

Shooting through the window can also be a waste of precious film if you don't go about it right. Most airline passenger planes fly much too high for you to get good shots of the ground, with the possible exception of rugged mountain areas. If you're flying above the clouds, however, you can get some beautiful cloud shots. Be careful to avoid overexposure; you're rather close to those clouds, and they're bouncing lots of light back up at you. If possible, take a meter reading. Here's one place where you'll need a meter that measures reflected light; you can't use an incident-light meter for taking a reading through a plane window.

When boarding the plane

When you board your plane, pick your seat carefully, checking the view from the window. A seat directly above the leading edge of the wing will let you shoot forward toward approaching scenery or clouds, and include the wing-tip and whirling propellers if you want them.

Avoid the sunny side of the plane. Avoid any window that is hit by light. On such a window, condensation may give you trouble. What's more, you might run into flare when shooting into the sun, or glare from the aluminum wing of the plane. So pick a seat on the shadow side, and shoot with the sun at your back.

There's bound to be considerable vibration on board the plane. To minimize this vibration, hold the camera in a steadily braced position against your forehead, but do not lean it or your hands against the side of the plane or against the window. That would only pick up the vibration and transmit it to your camera.

There are plenty of ideas that we haven't discussed. When you get to the field, you'll discover many other possibilities yourself. With plenty of film, and some ingenuity, you should come up with a first-class movie.—THE END.

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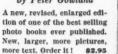
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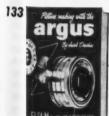
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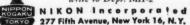
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NEW MATERIALS, EQUIPMENT, PROCESSES REVEALED AT ANNUAL S.P.E. CONFERENCE

From May 17 to 20 the Society of Photographic Engineers convened for their fifth annual conference, at the Hotel Thaver in West Point, New York. Except for the fact that the conference was sponsored by the U. S. Army Signal Corps, there was nothing "military" about the meeting in spite of the West Point location. Over 30 technical papers were presented, the subjects ranging all the way from motion picture cameras capable of taking pictures through a microscope at 120,000 frames per second, to the impact of reversal color films of "box camera" speeds on photographic equipment design. A fairly wide assortment of technical and manufacturer's exhibits helped one gain a picture of what the scientific boys have in store for photographers in the future.

Dr. Edwin H. Land, President and Director of Research of the Polaroid Corp., was awarded the second S.P.E. Progress Medal, following which he presented an address with the odd, but well-chosen, title The Case of the Sleeping Beauty. More about this later.

Five Main Categories of Subjects

The papers delivered by scientists from all over the USA were grouped under five main categories: (1) Photographic Instrumentation, (2) Photographic Optics, (3) The Photographic Process, (4) Photographic Apparatus, (5) Apparatus and Techniques for the Evaluation of the Photographic Process. To review every paper given under these headings is out of the question, but I can hit some of the highlights.

Photographic Instrumentation

The expression "photographic instrumentation" is probably foreign to most photographers. Even photographic engineers who use the expression freely are not agreed upon what it does or should embody. Evidence of this is the fact that Mr. Jean St. Thomas, Editor of the S.P.E. quarterly Photographic Engineering discussed the subject under the title Photographic Instrumentation: A Proprietary Terminology for Its Consolidation. My dictionary did not help to make clear to me just what Mr. St. Thomas means by "proprietary terminology," but I gather that he wants a standard definition of photographic instrumentation accepted which does not include everything in the world of photography, as some earlier definitions

implied. He also wants logical terms to classify the various divisions and subcategories of photo-instrumentation. One might think this would be an easy task. But it's not. A photographic instrument, in the broadest sense, is any device in which a photographic recording process is employed. Therefore, photographic instrumentation would include all such devices. However, this would encroach upon the aesthetic and commercial areas of photography, which the engineer wishes to avoid. St. Thomas suggests that engineers limit their understanding of photo-instrumentation to photo-devices which serve to measure quantitative data. But terms have already come into the field which imply photographic measurement, such as photogrammetry." Now this latter term has become so closely identified with aerial photography for topographic purposes, that when photography is used for other measuring purposes, it has been necessary to use the awkward expression "non-topographic photogrammetry." The further one proceeds into the subcategories of metrical photography the more cumbersome and illogical the expressions become for specifying them. For example, in medical photography if a system were devised for measuring the extent of movement involved and the frequency of certain intestinal rhythms, we could end up with something like the following-nontopographic photogrammetrical proctosigmoidiscopic stereo-cine-matography. I am sure all our sympathies are with Mr. St. Thomas if he can prevent such circumlocutions.

Mr. Robert H. Nesbitt, Army Engineers, described a borehole camera and projector which greatly aids drilling operations that are essential in constructing dams, bridges, etc., to determine the nature of the earth beneath the surface. Previously the information was obtained by drilling and examining core samples. This was an uncertain method, and unless the core samples or records were retained, old drillings served no purpose. With the new borehold camera a continuous 360-degree color photograph can be taken of the interior surface of a 3-inch borehold. A special projector turns the final color image inside-out so that one can sit back and observe the laver structure as the camera has recorded it from the top to the bottom of the hole.

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The papers in this group were a bit too involved for review here. They included a precision method for measuring the relative aperture of a lens, the effect of elevated temperature on the focus of long focal length cameras, the effect of image motion on resolving power, a rapid scanning device for measuring the contrast rendition of photographic lenses, the effect of object contrast on photographic resolving power, etc. The important thing for photographers to draw from such papers is that determining photographic lens characteristics is not a simple, cut and dry matter, as frequently presumed. Two lenses, for example, one having twice the resolving power of the other when measured on an optical bench, may produce photographs which, in terms of visual sharpness, are in the reverse order. Neither the lens nor the film can be considered separately. Rather, it is the lens-film combination. plus the contrast characteristics of the subject, which determine the final picture results.

The Photographic Process

A new series of black-and-white films of high inherent resolving power were described by Joseph E. Duffy of Ansco. The films also have special physical characteristics that make them amenable to rapid processing techniques. Called Radarscope Type 540, Telerecord Type 454, and Aerial Duplicating, Type SS45296, the films are unique in being capable of producing processed images within less than one second after exposure. However, somewhat longer processing times are generally used. For example, Ansco Telerecord film exposed for 1/5 second at f/3.5 gave an image having a resolution of 100 lines per millimeter after a total processing time of 10 seconds, including drying. A special monobath developer in which development and fixation take place simultaneously is employed.

Dr. J. E. LuValle and Dr. T. H. James presented separate papers on the theory of photographic development. The role and mysteries of ionic and other charge effects in development are gradually giving way to systematic research studies which eventually may lead to the discovery of more efficient developers for particular films.

Dr. R. È. Hayford of Haloid revealed a new procedure for reversal development of continuous-tone Xerographic images. Up to now Xerography has been a positive-to-positive process, used mostly for line copying and reproduction. Continuous-tone Xerographic images have been possible from continuous-tone positives for some time,

(Continued on page 102)





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S.P.E. CONFERENCE

(Continued from page 101)

but by placing a counter-charge plate a small distance above the image-wise electrostatically charged Xerographic surface during development, the developing powder can be directed to the surface in such a manner that a positive image is produced after the plate has been exposed to a negative.

Mr. Larry G. Welliver presented some interesting data on the use of thallium salts in fixing baths. He showed that when small amounts of thallium nitrate (0.3 gram of thallium nitrate per liter of fixer) were added to a sodium thiosulfate fixing solution, the rate of fixing for film emulsions containing silver iodide is greatly accelerated. The clearing time for such films is reduced three times. A film that normally is completely fixed in 10 minutes (twice the clearing time) would be fixed in a little over 3 minutes in a thalliumcontaining fixer. The presence of the thallium salt also improves the exhaustion characteristics of a fixer. As Mr. Welliver stressed, photographers should be fully acquainted with the toxic characteristics of thallium salts before adopting them in practice. These salts can be absorbed through the skin, and thallium accumulates in the system. It causes the hair to fall out and can produce serious damage to certain body organs, eventually leading to death if a sufficient quantity builds up in the body.

John M. Centa of duPont reviewed the characteristics of their new-type film base, called "Cronar." This is a polyester material formed from ethylene glycol and terephthalic acid. In comparison with cellulose triacetate, vinyl chloride, polystyrene, etc., Cronar has many advantages for photographic film purposes. It has superior tear strength, better stability and improved dimensional characteristics.

Photographic Apparatus

Mr. Charles A. Hulcher described a new camera especially developed for the Press which amateurs could have a lot of fun with. It is a 70mm rapid sequence camera, providing 2½ in. x 2½ in. negatives at rates from 5 to 20 per second. It is light in weight and can operate from a small 12-volt battery. It is a reflex focusing camera, with shutter speeds ranging from 1/25th to 1/2880 second. Lenses from 3¼-inch focal length to 40 inches can be interchanged rapidly. A rapid, repeating electronic flash unit is also available for sequence flash photography.

Mr. Charles W. Wyckoff showed how enlargements could be made from 16mm

or 35mm negatives in a well-lighted, moving trailer by use of a camera-type enlarger incorporating an electronic flash unit as a light source. For focusing, an incandescent lamp is used which has practically no effect on the exposure, because after focusing a mechanical shutter closes off the light when the enlarger paper is in the focal plane, and the image itself is exposed for only 1/100 second periods.

The Case of the Sleeping Beauty

As mentioned previously, Dr. E. H. Land gave a stimulating address following receipt of the S.P.E. Progress Medal. He encouraged photographic scientists to use their imaginations and to try ideas just for the fun of it, even though they might appear wacky on first thought. His point was well established when he revealed what he had been playing with in color photography. But he made it definite that in presenting the process it was in no way implied that he was connecting it with a future color material for the Polaroid Land Camera.

Dr. Land first asked-as he had asked himself previously—"what is color?" It certainly is not what photographers usually think it is. Using two projectors. he presented on the screen two superimposed black-and-white positives, the negatives for which had been made through a greenish and a reddish filter. respectively. In normal two-color photography both positives would be projected through filters, but Dr. Land showed that when only a red filter is used for the red separation positive. and the green separation positive projected in black-and-white, a fairly realistic color reproduction is produced. In a still-life shot of a bowl of fruit there was no mistake that the bananas were vellow and the oranges bright orange. Even "white grapes" showed their characteristic greenish color, but not as vividly as one would desire in a full color reproduction. An outdoor scene showed a definite blue sky, and the whitesafter some adaptation-did not appear pinkish. If one turned around to the projectors it was hard to believe that only red and gray were coming from them.

Dr. Land even produced color prints by the same procedure that gave visual colors related to the scene colors even though only red and gray colors were used in forming the superimposed images.

Thus, the "sleeping beauty" was brought to life, because a color process using a red and gray synthesis had been proposed many years ago but had not been brought to practical fruition.

-THE END

VIEW-MASTER SYSTEM

(Continued from page 89)

ones. In such a case, the difference in thickness between the two types of reels can be compensated for by turning the focusing knob four notches.

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Images up to 40 in. square, quite sufficient in size for a home showing, can be projected with brilliance. The Sawyer's projection system requires far less work, eye-strain, or adjustment than any other system available.

If you don't want to project 3-D stereo, but still want to see your shots on a screen, there are the two other



The wheel set between the two lenses changes the position of the lenses so stereo pairs can be made on both the top and bottom edges of the 35mm film.

2-D projectors. The Junior Projector (\$9.95) has an f/3 doublet lens, plastic construction, and a maximum screen image of about 20 in. The S-1 projector (\$44.50) has an f/3 coated anastigmat lens, aluminum body. Images up to 36 in. square can be projected with adequate brightness.

There are a few other important accessories. Two closeup attachments (\$9.75 a set) allow you to focus the Personal camera as close as 24 or 36 in. The attachments include parallax correcting prisms for the viewfinder.

The flash unit (\$14.75), which screws directly into the top of the Personal camera, is a fascinating instrument. It has its own rangefinder. When you focus



To find the proper aperture to use with flashgun, you set arrow on guide number, focus rangefinder of flashgun, read off aperture opposite line on knob rim.

on your subject, the dial on the flashgun measures the subject distance and divides it into the flashbulb guide number. (Continued on page 104)



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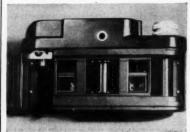
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VIEW-MASTER SYSTEM

(Continued from page 103)

Any comparison of the View-Master stereo system with others must take into consideration the intent of the manufacturer in offering his product. As the name "Personal" implies, the system is specifically designed for amateur, "personal" use with virtually foolproof operation and economy. The small stereo pairs make focusing errors impossible and the simple exposure calculator dials help eliminate poorly exposed stereo pairs. The viewers are inexpensive. The stereo projection system is the simplest vet encountered. The amount of sharpness achieved in projected or handviewed 12 x 14mm stereo pairs is amazing, although it does suffer in com-



Two small square cubicles hold lenses. rise in elevator shafts to top edge of film after 3D pairs are made on bottom.

parison with slides of the far-moreexpensive-to-produce 23 x 24mm format stereo. Because the focal length of the lenses used in the camera is considerably longer than the diagonal of the film, the stereo effect is reduced slightly. Thus pictures have a more real, less waxen, dummy appearance than stereo pictures produced in more conventional systems.

The Sawyer's View-Master Personal Stereo system is ideally suited for home use. The individual units, camera, cutter, viewers, and projectors show an ingenuity of design, a sturdiness of manufacture, and reliability in six months of tests that few other samples of photographic equipment have ever matched.—THE END

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BUILD A HOUSING

(Continued from page 69)

may also be used for the skids. The camera itself is held to the platform by a flat-based tripod screw. Before drilling the hole for the tripod screw, place camera and platform in the box. If a variable focus lens is used, extend the lens to its fullest. Position the camera so that it almost touches the front plate. Carefully remove camera and platform and mark the position of the camera's tripod screw mount. Drill the hole carefully.

The controls

Replace camera and platform in the box and line up the hole for the winding key. The hole must hit dead center in order for the winding key stem to work properly. Drill the hole with a 5/8-inch drill and use the 9/16 tappet to make the screw threads.

The hole for the shutter control (15), in the case for the Revere camera, is set about ¾ inch above the camera release, thus providing the necessary leverage. (The location of the control holes in your box will depend upon your own camera.) The same lining-up and drilling procedure used for the winding key is used for the shutter control. Remember, one of the bolts must pass between the two controls.

The control for the winding key is assembled by first screwing half the compression joint into the box. Cut enough of the asbestos graphite packing to wind about five or six turns around the stem (pictures, page 69). Insert the stem into the joint and wrap the packing around it. Work the packing back into the gland for a tight fit. Now cut a small piece of the Form-a-Washer and wrap it around the other side of the joint. Screw the nut end of the joint over the washer. Neoprene washers may be used to take the space between wheel and joint.

The shutter control is formed in the same way after the arm is bent to shape. Neoprene washers may be used on both sides of the joint for extra safety. The washers represent a safety factor. Controls have been assembled without them.

The gasket

The gasket (4) is cut from the 7½ x 8¾-inch gum rubber. A four-sided hole is cut to leave the gasket 1¼ inches wide on all sides. Brass may also be cut to size, following measurements used for the front reinforcement. Brass can be hack sawed easily. Drill ¼-inch holes to match back plate in both the brass and the gasket.

The wings

The wings (16) make it possible to pan a movie camera under water with a minimum of flutter showing up during projection. The fins measure 17 by 5½ inches and are rounded at the tips. Clamp them down to a flat surface and do your forming with a coping saw. Sandpapering the edges gives a better finish but means nothing to actual performance. After they have been formed, bond them to the top and bottom of the case. Cut the ¾-inch Plexiglas rod to size and insert handles near the ends. Use screws and ethylene dichloride to hold them in place.

Testing

Bolt weights (1), back (3), and gasket (4) to the housing and she's ready for her trial runs. About the best, and probably least glamorous, place to start testing is the bathtub. Fill up the tub and let the housing soak overnight,

If you wake up to find the inside nice and dry, you are 'way ahead of the game. If the reverse is true, the leaks must be found. A seam leak can be remedied by liberal doses of ethylene dichloride. Even a control leak isn't too tragic. Remove the control, seal up the hole with a piece of Plexiglas, and redrill. Leaks through the control are usually caused by poor packing. Repack the control and try again.

The next step is to find out if the housing will stay dry under pressure. Place it at the deepest end of a swimming pool and leave it for about a half hour. Inspect it under water to see if leaks develop and where.

The big test of course is in the lake, river or ocean where you intend to shoot. A few dives with the housing, but without the camera, will tell the story. When you're satisfied that the housing is waterproof, you can put it to work.—THE END

FREE LITERATURE

An extensively revised edition of Kodak's Notes on Tropical Photography, punched to fit the Kodak Photography. Punched to fit the Kodak Photographic Notebook, is available from the Sales Service Division, Eastman Kodak Company, Rochester 4, N. Y. The pamphlet recommends simple precautions which will help photographers when living in or making visits to tropical regions.

Filter Magic . . . with Argus Cameras discusses adding sparkle and punch to pictures through the use of filters. For a free copy, write to Sales Service Division, Argus Cameras, Inc., Ann Arbor, Michigan.

Indoor Photos Made Easy and Indoor Movies Made Easy offer a simple, step-by-step approach to the problems of indoor picture and movie taking. Each describes in detail the procedure and equipment required by the beginner as well as the advanced amateur. For copies of either, write Smith-Victor Corporation, Griffith, Indiana.

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UNDERWATER FLASH

(Continued from page 64)

however, the problem of color values becomes extremely important.

All water has a filtering effect on red and vellow light, particularly the ocean water. As a result, even sunlight loses its warm look after passing through enough water, and as you go deeper everything begins to look bluer and bluer. The same happens to the light from a flashbulb. To compensate for this effect clear white flashbulbs are used with daylight type color films. This is done so that their relatively "warm" light output (about 3800K) will offset to some degree the predominantly blue cast of the ocean water. However, the value of this warmth falls off rapidly as the light passes through water. (For an ultra close-up flash-a few inches-best results would be had with a tungsten or flash type color film, as there would be little or no filtering effect by water.) To give you some idea of an underwater flash exposure, here are the details of one which the writer made successfully. A swimmer was sidelighted with a #3 Sylvania bulb placed 10 feet from him. The camera was 20 feet from the swimmer. Exposure was at f/5.6 with a slow enough shutter to get all the flash.

How do you wire a flashgun?

Oddly enough, wiring for underwater flash is no problem. Ordinary brass sockets and chrome-plated brass reflectors are suitable and no special waterproofing is needed. A battery-capacitor circuit is desirable to provide the extra "kick" necessary to overcome the resistance created by the water in the sockets. Be certain, however, that the connections for the flash at the camera housing are thoroughly watertight.

Because the best flash is done with the bulb off the camera, and this requires much help in changing flashbulbs, the trend will undoubtedly be towards underwater electronic flash. A few of these have been manufactured. but their present high cost restricts their use. Since no underwater work should be attempted without an assistant, for reasons of safety, one man can swim with the camera, and one man with the electronic flash on a long cable, with spectacular results.

Do filters help underwater?

Under certain conditions, the use of yellow filters underwater can improve contrast in black-and-white films, but the deeper one goes the bluer the water gets and the denser the filter required to separate the shades of blue. For dives to 30 feet there doesn't seem to be any real reason for using a yellow filter, if a sufficiently contrasty film is exposed and developed correctly.



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In color photography, intelligent use of filters can bring noticeable improvement to the picture, but you must decide whether you want to shoot the picture as it looks to the eye, or to bring out the colors you know are there, even though you can't see them. The combination of flash and filters is frequently used for this purpose when photographing undersea growths which are known to be brilliantly colored, if they can be illuminated

Near the surface most colors look pretty much the same as they do above, but as you descend you'll notice that a bright red changes to terra cotta or brown before you reach 40 feet. Orange loses its color more rapidly than vellow. There is a bluish cast overall, which the camera will record.

If you wish your ocean to look a bit "warmer" try some filters in the Kodak Wratten CC Red series. Start with a CC-05R near the surface: work up (or down) to a CC-40R for depths of 30 feet or more. As we mentioned before, in shallow water a Skylight filter will probably compensate sufficiently to please most tastes.

Filters are fine for scientific accuracy, when it is desirable to try to duplicate surface color values, but most of the time it would be a shame to try to change the subtle, dream-like quality which only the ocean can have. In movies, particularly, it's far more interesting to watch the color values change with depth than to always try to make them match surface values.

Take care of your equipment

Valuable cameras have been flooded and ruined because a wing nut or screw wasn't properly tightened, or the gasket leaked before the swimmer had a chance to peer into the window and check for leaks.

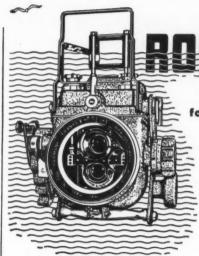
All new cases should be tested underwater without the camera inside. If a case is going to leak it will usually do so in the first few feet. Increases in depth tend to tighten the lid of the case and make any seals tighter-up to the point where pressure distorts the shape of the housing.

Leaks in the packing glands for controls usually can be corrected by tightening up on the packing as is done with the stuffing box of a boat.

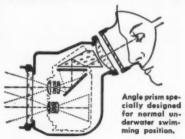
(Continued on page 108)

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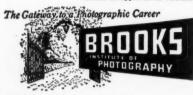
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UNDERWATER FLASH

(Continued from page 107)

It's a good practice to keep the cameras and their underwater cases out of hot sunlight before starting to dive—water is apt to cool the hot air inside the case and cause condensation. It's also a good idea to grease the rubber gasket with a waterproofing grease each time the box is sealed shut.

Where's the best diving?

Magazines and newsreels showing the ancient Greek and Roman relics photographed and recovered by Mediterranean skin divers have led some people to believe that we don't have exciting undersea sights along our shores. Nothing could be more wrong. For the best subject matter head for the "reef country" off the Florida coast, throughout the Caribbean, all around Bermuda, in the Hawaiian Islands and the South Pacific. There is clear water also where it's colder, but the lush coral growth and colorful fish aren't there.

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About the future

Even surface swimming seems a very incomplete recreation after one has spent sufficient time enjoying what lies below. Today, with the help of a few simple inventions, man fulfills his natural curiosity about the sea from which all living things got their start. He's found a new escape into a dreamlike world too vast for him to comprehend. He's excited over the tiny bit of what he saw and photographed in the small radius that was his underwater vision. His camera has brought back an accurate and perhaps poetic look at the most unknown part of our world. He'll want to go back to it again and again with his camera.

And that means you, too .- THE END

LOU BERNSTEIN

(Continued from page 85)

was to clear his mind of the murky confusions among which he had been groping. The other was to throw him into contact with people whose feelings about photography were not unlike his own.

"It was wonderful!" Bernstein exclaims. "The discussions! The experiments! The excitement! Sid helped me find out exactly what sort of work I wanted to do. And then to discover that there were a lot of other photographers who had the same sort of ideas—well, it was wonderful. Most of us, it turned out, were interested in people—people more than anything else. Most of us were parttime photographers, too. And most of us were working in our own neighborhoods,

close to home, with the things we knew and understood the best. Not that we had much choice, you understand. That was right at the bottom of the depression, a time when nobody was taking any pleasure cruises. But even if we'd been better fixed, I doubt that many of us would have left the neighborhood to photograph. I wouldn't have, anyway—and when it comes to that, I haven't vet."

At 34: a new career

Bernstein put in only three semesters as a member of Grossman's class, but the effect of those few months upon his work can scarcely be reckoned. Long after he pulled out of the group, Grossman remained his chief critic, advisor, and inspiration. Meanwhile he was building up to a crucial decision. The split between his daily stint in the shipvards and his weekend excursions with the camera had been a distress to him for a long time. Finally, when he was thirty-four, he began to cast around for another way to make a living-for work that would bring him into more intimate touch with photography and photographic affairs. Yet even then, in 1945, he was not much tempted by the seductive glitter of the professional market, and for reasons that pierced to the heart of his belief in what the camera can and should be used

"Get this straight, though," he insists. "I'm only talking about myself. What's right for me may not be right for the next guy. It's just that I'm not cut out to take orders from an editor, to slant and angle my pictures. I've got to be my own boss. That's why I never tried to become a professional. That's why, when the time came, I went out and hunted around and landed myself a job at Peerless, instead."

Help—given and returned

From the first, Bernstein set out to make his place in the store count for more than just a weekly paycheck. He used the advantages it put at his disposal to develop his control of photographic techniques, to expand his circle of photographic contacts. Little by little, he came to know such photographers as Edward Steichen and Ernst Haas and W. Eugene Smith, such critics as Don Langer, Seymour Spector, Mabel Scacheri, Jacob Deschin. Even more important, he found in his job a convenient and practical method of passing along to others the lessons he had learned. "A lot of help has been given to me over the counter," he says, "and that's the way I try to keep it in circulation."

The result: Bernstein is today one of the store's most popular fixtures. Professionals depend on him for a kind of service, amateurs for a kind of encouragement they would not otherwise be likely to get. Between the two, Bernstein has come to know the medium from the ground up. His dealings with photographers of every type have taught him not only what the camera can do but also what people want and need to do with it. This is what he values most about his job. For though he is concerned about shutter speeds and lens performances. he is even more concerned about human

As a rule, his duties at the store leave Bernstein free to photograph only on weekends, holidays, and during the long summer evenings. This, however, is an arrangement about which he offers no complaints.

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"That way I work," he says, "two, three days a week is enough. Let me explain. To me, taking pictures is a way of telling the truth, sure. But it's also a way of learning the truth. With a camera in my hands, I seem to feel and see a lot more than I would otherwise. Everything gets more vivid, more dramatic, more intense. I guess what it adds up to is that I go all out when I photograph, give it everything I've got. I get excited and wrought-up. And I get pooped. Like I say, a couple of days a week—good solid days, I mean—is usually all that I'm good for."

Neighborhood: good discipline

Bernstein no more permits his work to be thwarted by space than by time. True, he photographs almost wholly within his own neighborhood-a discipline that other people might find irksome, indeed. Bernstein feels differently.

"Usually," he says, "it's the photographer, not the material, that wears out first. Me, I'm still a long way from being worn out. Frankly, I think there's so much variety in my own back yard as there is in a thousand miles of travel."

Isn't such variety a very subtle thing, perceptible only to someone thoroughly familiar with the subject matter? Sometimes, Bernstein agrees. But, he adds, it's sometimes a very dramatic thing, too-as dramatic as a war, a famine, an earthquake-and, being more intimate, therefore more moving. "Love, hate, joy, grief, comedy, tragedy-it's all right here," he says. "All you have to do is look for it. Why go any further?"

When Bernstein speaks of such things as "comedy" and "joy," he pushes forward what for him is a very important point. As might be expected, he is a deeply serious man. He is not, however, a deadly serious man. Though his camera is frequently turned to somber and moody themes, he is not a member of that grim and humorless group of photographers who, working in roughly the same areas and with the same kind of material, seem more inspired by indignation than by anything else. On the contrary, Bernstein's eye is often arrest-

(Continued on page 110)

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LOU RERNSTEIN

(Continued from page 109)

ed by the whimsical, the amusing, the ridiculous—for instance, in the shot of the young man, on a Sunday morning, out walking his two dogs (page 81).

Occasionally, too, he catches a flash of astonishing beauty in the midst of grime and litter. The back porch on which the girl is playing with her bird (page 82) is not a very attractive spot, but both picture and girl have about them an almost Oriental mystery and grace—rare, under the circumstances, to possess, but just as rare to have so keenly observed.

Developing design sense

Another notable feature of Bernstein's work is his sense of design, something that was certainly encouraged in him by his early training as an architect but perhaps even more by the strict paterns and disciplines by which his photographic life has been governed during the past few years.

Almost all of his pictures depend at least to some extent on this sense of design to carry their messages—the result, on occasion, of Bernstein's judicious cropping. (About cropping in general, he says: "I usually only crop when I've been working at long range. Then I just trim away what seems unimportant and superfluous. When I get in close, though, it's another thing entirely. If I've been working in close, and then find out that I have to crop, I can't help feeling



that I've missed, maybe even made a bad picture.") However, the meanings of some Bernstein photographs are communicated almost wholly by this gift for design. A good example would be the picture, taken from above, of the two boys on a playground swing—a picture in which, with design, Bernstein is able to suggest the loneliness and the zooming exhilaration of flight, page 84.

Childhood: topsy-turvy

An even better illustration, though, would perhaps be the photograph of the two boys clambering on the iron fence (page 83). This is not a picture from which the viewer learns very much from either facial expression, mood, or action. Indeed, the striking fact is that, at his first quick look, the viewer is unable to tell which side should go up and which down. And then, after a moment, he begins to understand: again by use of design, and very subtly, Bernstein has taken a picture, not of children, but of childhood—that complex and topsy-

turvy kingdom in which adults are always a bit confused, a bit off balance, a bit disbelieving.

Working so much at close range, in cramped quarters, and with subject matter which must be photographed, if at all, at an instant's notice, it is natural that Bernstein should use only a 35mm camera-either a Leica or a Canon. He has neither the time, space, or leisure for larger, more imposing equipment. Too, he photographs altogether with natural light. He develops and prints in a primitive, home-made darkroom. All in all, his working methods are simple. If his pictures are sometimes complicated, it is because of a complicated eve rather than because of complicated equipment.

Bernstein is a fine photographer—no doubt about that. But he is also a limited photographer. That his limitations are voluntary and self-imposed does not relieve some people of their wish to see him push out on new adventures, into new territories. Of this Bernstein himself feels no need. He continues to work, as he always has, in the same places, in the same ways, with the same purposes. As always, he aims for one picture at a time, leaving almost unconsidered the technique of the picture story, the grouping together of photographs into a unit.

Is there monotony?

What he says about the abundance and the variety of subject matter in his own back yard is true: his photographs prove it. Even so, there is sometimes a monotony to them, a similarity that drifts over them like soot over a neighborhood. For all his undeniable perception, vigor, and sensitivity, there are those who think it would be a very good thing were Bernstein to leave home to go on a trip around the world.

Found: his own world

A man to whom taking pictures is more than a hobby and yet not quite a business, Bernstein can be considered neither an amateur nor a professional. Between his lecturing, his work with young photographers, his friends, his job, and his own excursions with a camera, he has fashioned for himself the sort of photographic life that suits him hest.

Furthermore, he thinks that it would suit a lot of other people, too—particularly those to whom photography is more a matter of the heart than of the pocket-book. "Look at the advantages," he argues. "You meet people. You get a chance to learn. You do your own kind of work. You earn a living. As far as I'm concerned, anyway, it's a pretty good answer. I keep busy. I take what I think are honest pictures. I'm happy. What more can a man ask?"—THE END

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TWELVE POINTERS FOR UNDERWATER SAFETY

While underwater photography does not require expert swimming ability, and although you'll grapple with few—if any—sea monsters, there are several precautions which are musts if you want to insure maximum safety below the surface. For more information, consult such publications as those advertised on page 106 and 107, and Underwater, the Skindiver's Manual, by Bill Barada.

Basics for beginners

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RAPHY

1. Don't start diving with mechanical lungs. Get used to a mask and snorkel first—in shallow water on a calm day.
2. Use flippers that fit snugly, but not too tightly, or you may get leg cramps. Socks under flippers are recommended to avoid chafing.

3. Don't wear ear plugs. These are a hazard and may be forced into your ears.
4. Take it slow and easy. Real dangers in skin diving are overexertion and lack of experience.

5. Don't go alone! Whether you are a beginner or an experienced vet, always swim with a companion—someone who is at least as good a swimmer as you.

6. Never dive headlong into the water while wearing goggles or mask. Slip into the water feet first, or "sitting."

7. Always wear a mask over your forehead, eyes and nose only. Upper lip and mouth must be free at all times.

8. Don't dive under a power boat, even though the engine is off. Someone may forget about you and start it as you surface. In a speedboat-populated area do your diving near an anchored boat or float—it will serve as a marker.

 Always look up before surfacing in order to avoid bumping your head on boats or rocks.

Consider others

10. No horseplay! Positively avoid horseplay when you or anybody else is wearing a mask or goggles with glass (even shatter-proof) lenses.

11. Never dive into a crowded pool while wearing flippers. You might accidentally injure other swimmers.

12. Keep track of your diving companions at all times. They in turn, should keep track of you.

Lung diving

Although we won't go into the complexities of lung diving here, one extremely important point of caution is: under no circumstances should you attempt to build your own air line or diving lung. Only tested and approved equipment should be used. For detailed information, you should refer to Underwater, the Skindiver's Manual.





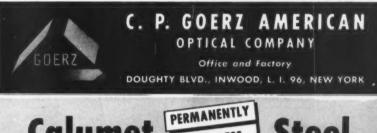
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35MM MINOLTA

(Continued from page 79)

mount. Also, a push-on sync. contact.

The entire back of the camera comes off when a sliding lever is pulled at the side revealing a one-piece cast interior.

The combined rangefinder-viewfinder is one of the most brilliant on any camera regardless of price. The central, round rangefinder image is distinct from the main image. The frame of the picture area is quite well defined.

We liked the focusing lens mount. It moves very smoothly and steadily under the pressure of one finger. A quarter turn changes focus from 2.7 feet to infinity. There's a depth of field scale to be consulted if needed. The shutter release works smoothly and the shutter is quiet. The rapid-wind lever moves the film an entire frame with but one throw. We would have liked a better finger-gripping surface.

Opening and loading the camera is exceptionally simple. Few, if any, 35mm cameras have a takeup spool to which film can be attached more easily. The film leader slides into a wide groove and the perforations catch on two pins when the film is advanced.

The four-element, f/3.5 non-inter-

changeable Rokkor lens made technically excellent pictures. It's rather unusual, if not unique, to find a camera in this price class with both a combined range and viewfinder plus a four-element lens. Most inexpensive 35s have threeelement lenses which, although adequate when used at widest aperture, do not generally compare with the best fourelement lenses. The Rokkor was quite sharp in the corners when used at its widest aperture, and enlargements made at f/3.5 compared in quality with similar pictures made with far more expensive equipment at f/3.5. We sent the camera off to Cleff. He reported:

"The 35mm Minolta A handles easily and felt comfortable. Although lack of it wasn't annoying, I would have liked a bit more contrast in color between the two rangefinder images. I liked the rapid-wind lever and the convenient position of the rewind button on the camera bottom. The film loaded easily, but the rewind knob, if extended slightly to get a better grip, sometimes disengaged from the film spool. But I could reengage it with no difficulty. As far as picture quality and handling are concerned, I'd be happy to use the Minolta A on any professional assignment."—HERBERT KEPPLER.

MINOLTA REFLEX

(Continued from page 78)

held at waist level. The two-piece hood erects with a flip of one finger. The ground glass is extremely fine. The magnifier, built into the hood, covers the entire ground glass surface. An f/3.2 viewing lens produces a bright image. You focus the camera by moving a lever underneath the taking lens. The entire front plate, housing both lenses, moves in and out on helical gears. There's a small additional pointer on the lever to indicate the correct settings for infrared film. (Unfortunately, no infrared film is readily available in 120 size in this country.) The shutter release (1), threaded to hold a cable release, presses inwards smoothly and can be locked against accidental exposure by turning a collar surrounding it. Two other gadgets, on the front of the camera, control the built-in self-timer and the M or X synchronization (see picture page 78).

Here are a few other features: a threaded European sync. terminal, a double-exposure release button allowing you to recock the shutter without moving the film if you want to make double exposures, hayonet-type lens mounts on both viewing and taking lenses, direct eye-level sports finder and internal baffles to prevent possible light flare.

Fine, all fine. But does the camera work? How good is the lens? Would the camera stand up under use? We handed the Minolta Autocord over to a professional photographer, Bernie Cleff, to use on a couple of assignments. He reported as follows:

"The Minolta Autocord, when compared in quality and price with some of the reflexes I've been using, makes them look sick. I liked the feel and working ease of this Minolta. The lever focusing can be operated with one hand, leaving the other hand free to hold a flashgun or other accessory. The film advance and cocking lever is in the same place as on many of the more expensive cameras. But I don't like the way the lever is made. You have to hold it between your fingers or it folds right against the camera during use. But this is a small criticism. I'd suggest, however, that you check the edges of the film for sharpness of contact at the pressure plate. On my contact prints, the left and right sides seem fuzzy."

We were frankly concerned with Cleff's trouble with the lens's definition. We ran a lot of film through the camera, shot pictures of brick walls at various apertures, and examined carefullymade enlargements from edge to edge. At maximum aperture, we detected only the slightest falling off of definition in the very corners of the picture. In other words, the camera and lens were apparently properly aligned, and the lens was performing as well as just about any twin-lens reflex lens we had ever tested. For \$99.50, that's not bad. Cleff had better check that contact printer.

-HERBERT KEPPLER

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SPECIAL REPORT

NEW <u>BIG</u> <u>SCREEN</u> PORTABLE EDITOR

In testing the new 8mm and 16mm Craig Projecto-Editors, we were impressed by three things: The large viewing screens; the brilliancy of the screen images; the portability of the outfit.

In over-all physical size, the 8mm and 16mm units are identical. Completely enclosed in their carrying cases, each unit measures $7\frac{1}{4} \times 7\frac{3}{4} \times 13\frac{1}{2}$ inches. With the cover removed, two reel spindles (high 4 to 1, and low 1 to 1 gears) swing out to lock in position. A splicer clips to the front panel, and a film cement bottle fits into a receptacle on the base. Weight: 11 lbs., 2 oz.

The 8mm viewing screen is about $3 \times 4\frac{1}{8}$ inches in size; the 16mm screen is $3\frac{1}{4} \times 4\frac{1}{4}$ in. The way the screens are hooded, together with 75-watt projection lamps, provides an extremely bright image over a large viewing area.

Straight line, left to right, threading is quick, with an automatic lamp switch which illuminates the screen only when



the film gate is closed. Optically, the 8mm and 16mm editors are identical except that the 8mm condenser, rotating prism, and projection lenses have been scaled down for the 8mm size.

The picture is prefocused and preframed at the factory. Naturally the film can be run forward or backward at any speed, or stopped entirely for stillpicture projection. A frame marker identifies frames selected for cutting.

Complete with splicer, reel spindles, carrying case, cement, the Projecto-Editors sell for \$79.50. Viewers alone are available for \$49.50.—DR. CINEMA



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BOOKS in use

GEORGE B. WRIGHT



Books on "seeing"

Last month, we ended in the middle of an account of books about "composition"—the traditional approach to making pictures effective. In that column, it was pointed out that the discussion of pictures, as presented in many books and camera club lectures is based on three strands.

There is the group of old "Laws" about pictures, drawn from the practice of the English nineteenth century painters. (Examples of the work of such painters is rarely seen todaybut you may have seen chromos of Burne-Jones' work, which is typical.) To these "Laws" about diagonals and triangles, was added Hogarth's 8-curve and the mathematical formulas of Dynamic Symmetry.

All of these items were imported from painting and photography wasand is-expected to conform to them.

Design and function

This approach is understandable enough, at least by the 20/20 vision of hindsight. There is a perfect parallel in the design of the automobile. To the first builders, the only new factor was a prime mover which happened to burn gasoline instead of oats. So for some years they constructed horseless carriages, until they gradually realized that they were dealing with a new problem-one which required re-thinking and a design which grew out of the materials they were working with, rather than a design which was imposed on their materials by a carryover of ideas and assumptions. From that point on, the ghost of the horse disappeared from in front of the automobile.

This has happened in thinking about photography. Recall the analogy we used last month-you have a camera in your hand, but you have never seen a photograph and you do not know the real possibilities of the new instrument. Instead of turning to painting (even "polite" painting), you decide to see what happens if you use the camera in all possible ways and study the results.

Today, we have a good many million such examples to study. From them, we can draw conclusions about the nature of photography in its own terms, not in terms imposed upon it from the outside.

I must point out, too, that art is indivisible. Of course, painting and photography are intimately related. But sisters can't-or shouldn't-always wear exactly the same clothes. Remember, if any painter ever looks

down his nose at you and at the camera, that outside of limited fields like English anecdotal painting, since the birth of photography it is the painters who have been imitating the camera and quite consciously so. But not mechanically, not its appearance of realism. They discovered the many extensions of vision provided by the camera, light accident, new viewpoints, simultaneous views, and took these over to use in painting terms. From Manet to Man Ray, the camera stands at the root of modern art. But that. too, is another story.

Back to "seeing"

Readers who ask about books to improve their "seeing" before they press the button, need this second-photography-in-its-own-terms-approach. Unfortunately, I can't point to a packed shelf and say, "Take your pick!" the way I can with the traditional approach. The information exists, but in bits and pieces not always easy to find even in a good library. There is a vacuum here which inevitably will be filled within the next two or three years. (I know of at least three manuscripts in preparation, which means that there must be several more in progress.)

Meantime, you can find some of the fresh thinking about effective and interesting picture-making in several books which cover a broader field. None of these writers come up with a set of easy rules as do the "compositionists." Today's feeling is that the world is not a set of static, frozen moments but a live and moving thing, presenting a fresh face to us at each instant. It is the significant instant, the pattern of tensions, which the camera alone can seize and which gives photography its full stature as an art.

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This thinking (even though it is not stated in these words) runs through books like Ansel Adams' Making a Photograph (Studio, \$4) and its introduction by Edward Weston. It is implicit in all of Jacob Deschin's books, spelled out in most detail in his Say It With Your Camera (McGraw-Hill, \$4). There is a different, but related, approach in the long introduction by Henri Cartier-Bresson to his collection of pictures, The Decisive Moment (Simon and Schuster, \$12.50).

The man between two stools

I should mention, too, Ray Bethers'

From Eye to Camera (Pitman, \$3.75). This is a curious book, although it has much merit and should be in camera club libraries. I find it odd because the author is thoroughly aware of modern painting, in fact is an expert in it, yet his "philosophy" as stated in the introduction is in conflict with his practice. He regards art in general as completely undefinable, and mysterious beyond all understanding in the first pages; then proceeds to divulge quite a bit of useful information and practice in the following pages. (Each "spread" has a pair of pictures which he comments on in brief, useful captions.)

Everyman his own critic

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RAPHY

If you are impatiently waiting for books which will spell out the ideas about pictures which have been gathering in photography for the last fifty years-and if the prospect of thinking things out for yourself doesn't throw you into a blue funk-you can read some of the books which will be source-material for many, many books vet to be written.

For example, there are two books which come out of the experience of the pre-Hitler Bauhaus, which was continued in Chicago as the Institute of Design. These are L. Moholy-Nagy's Vision in Motion (Theobald, \$10.50) and Gyorgy Kepes' Language of Vision (Theobald, \$7.50). [Note: These two titles are now scarce and supply is uncertain 1

Moholy-Nagy writes of all the arts from his long experience as one of the century's most influential teachers. Kepes, originally Moholy's student, then collaborator, and for many years a strong influence in his own right, sums up a great deal of knowledge about picture organization and visual response. His examples are drawn from both photography and the other visual arts, and from them he derives generally valid ideas of "plastic organization" in pictures.

Science and Joshua's trumpet

A few months ago, a new book appeared which is a major step in organizing our knowledge about pictures and how we respond to them. This is Art and Visual Perception by Rudolf Arnheim (U. of California Press, \$10). It is a landmark in the field.

As human knowledge has increased since the sixteenth century, it has tended to splinter into smaller and smaller specializations with less and less cross-communication between them. Many people believe that today's major task is finding a common language to strike across these boundaries and unite many separate bodies of knowledge into a unified system.

Dr. Arnheim has done this for psychology and art. He combines the factual knowledge of science (particularly Gestalt psychology) with a detailed and appreciative understanding of art. He can explain ideas and processes with that sure ease and clearness which comes from real understanding. (Continued on page 116)



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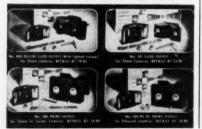
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ROOKS IN USE

(Continued from page 115)

And you can feel the warm, friendly intelligence of a born teacher behind the nages

This is not a book about photography or how to make a picture with a camera. But Dr. Arnheim is aware and knowledgeable about photography and you will understand picture design and effectiveness much better after you have read it. His chapters cover Balance, Shape, Form, Growth, Space, Light, Color, Movement, Tension, and Expression. Inevitably, some of the understanding of the relationship of elements, of balance and tensions, will carry over when you next look through a view-finder. Ten dollars for 400 large pages works out to a bargain.

Where are we now?

If you are still standing by, camera in hand, and looking for a book-which one? I'd say begin with Deschin and Adams. Look through Bether's book. If you are really serious about picture knowledge, buy Arnheim's book and spend a year soaking up the information. You won't need a palette on your calling card. Your pictures will speak for themselves. -THE END

All books mentioned here (except where noted) are available from MOD-ERN'S bookstore by mail. Send a postcard for a complete list of photographic books currently in print.

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NEW PRODUCTS

(Continued from page 34)

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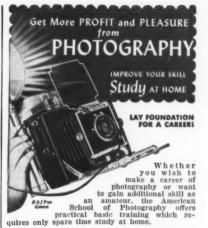
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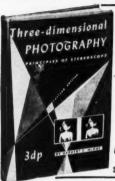
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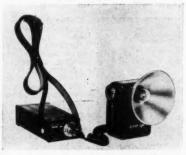
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NEW PRODUCTS

(Continued from page 117)

Ascor-Light Speedlight

Powered by dry battery or alternating current, the new Ascor-Light Model A-201 features light weight and economy of operation. The Ascor-Light has a 75 watt-second output and recharges in four seconds. Flash duration is 1/1300 sec. Guide numbers of 220 for fast black-and-white film, and 45 for color,



are claimed for the Ascor-Light. Its accessories include a booster unit, brackets for mounting the power supply and light unit to the camera, light stands, modeling lamps, carrying case, choice of reflectors. Including battery, the Ascor-Light Model V-201 is priced at \$89.95. For additional information on the equipment write: the equipment, write:

480 LEXINGTON AVE., NEW YORK 17, N. Y.

Bausch & Lomb Focusing Magnifier

Rapid critical focusing when enlarg-Rapid critical focusing when enlarging is the main feature of the new Bausch & Lomb focusing magnifier. The manufacturer claims that exact focus of the image on the enlarging easel can be obtained in three seconds when using this unit. This is made possible by use of the reflector and grid principle. In use the projected image from the negating in the magnificant of the projected image from the negating in the magnificant of the projected image from the negating in the magnificant of the magnificant of



tive is reflected into the eye by a mirror (there is no groundglass). The exact focusing plane is established by a grid which causes the viewer's eye to "accommodate" or focus itself on the image at the exact point where it also is in focus on the enlarging easel. Construction is of light green impact-resistant plastic. Price \$6.50. For additional information write:

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Long Focus Lens for Hasselblad

A new 135mm Carl Zeiss Sonnar f/3.5 lens is designed for the $2\frac{1}{4} \times 2\frac{1}{4}$ Swedish Hasselblad 1000F reflex camera. The long focus lens has a pre-set diaphragm with click stops as well as

in-between click stops. Focusing is from 40 inches to infinity, and there is an engraved depth of field scale. Price of 135mm Zeiss Sonnar, f/3.5, complete with front and rear lens caps, \$279.50, For additional information, write: WILLOUGHBYS

110 WEST 32 ST., NEW YORK 1. N. Y.

Stanrite Superpod Tripod

Featuring a gear type elevator rise of 11½ inches, as well as a horizontal gear drive that's designed for smooth panning, the new Stanrite Superpod tripod is available in two models. One, a two-section model, extends to 70 inches, and closes to 30 inches. The other, a threesection model, opens to 77 inches, closes

Featured in the Superpods are a single lock panhead handle, a ratched claimed to prevent cameras from fall-



ing, and a ball level to facilitate leveling the camera when the tripod stands on an uneven surface. Of aluminum construction, the legs, finished in grey wrinkle, are claimed to have jam-free clutches. Price, for the two-section model, \$19.95; for the three-section model, \$22.95. For additional information, and a free 24-page catalog describing this and other Testrite products, write: TESTRITE INSTRUMENT CO., INC. 57 E. 11TH ST., NEW YORK 3, N. Y.

Elgeet Cine Attachments

Telephoto and wide angle attachments are featured in the new Elgeet "Movie-Excitement" packages for owners of 8mm movie cameras. One package, designed for the Bell & Howell 220 and 252 movie cameras, includes an Elgeet Cinematar Telephoto Attachment, Elgeet Wide Angle Attachment, and viewfinder. Designed for Kodak



Brownie movie cameras, the other package includes the above attachments, plus a combination telephotowide angle viewfinder. (See illustration.)
Each of the Cinematar attachments has a four-element lens and comes complete with Series V filter rings. Price, for each "Movie-Excitement" package, \$38.80. For more information, write: ELGEET OPTICAL CO. 838 SMITH ST., ROCHESTER, N. Y.

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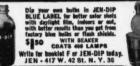
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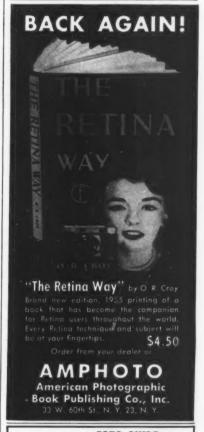
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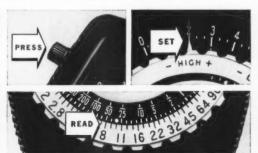


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